

*The Earth's Story: II*

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FIRST DAYS OF KNOWLEDGE

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FREDERIC ARNOLD KUMMER



# THE EARTH'S STORY

*As Narrated Quite Simply for  
Young Readers*

BY FREDERIC ARNOLD KUMMER

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*Volume One*

THE FIRST DAYS OF MAN

*Volume Two*

THE FIRST DAYS OF KNOWLEDGE

*Volume Three*

THE FIRST DAYS OF HISTORY

Each volume illustrated and  
with a frontispiece in color

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FINE ART



# THE FIRST DAYS OF KNOWLEDGE

AS NARRATED QUITE SIMPLY  
FOR YOUNG READERS

BY  
FREDERIC ARNOLD KUMMER

ILLUSTRATED  
BY



HODDER & STOUGHTON  
LIMITED : : LONDON



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THE FIRST DAYS OF KNOWLEDGE

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PRINTED IN THE UNITED STATES OF AMERICA



## PREFACE FOR PARENTS

IN the initial volume of "The Earth's Story," "The First Days of Man," the writer undertook to set forth for the benefit of young readers the salient facts in the development of Man and his civilisation from the beginning of the world up to the point at which our primitive ancestors, emerging from the shadows of a savage past, began to show those glimmerings of intelligence which marked their first great step upward from the beasts.

In treating this development as a continuous and dramatically unfolding story, the writer's hope was to interest the growing child in the acquiring of knowledge along orderly and understandable lines, so that he or she might not only

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obtain a graphic picture of Man's upward progress, but would at the same time acquire, by reason of this orderly presentation, the habit of logical thought.

The method employed is one which the writer has followed with gratifying success in the case of his own children, and depends primarily upon the simple device of linking each fact, as it is presented, to some other fact or set of facts, previously acquired, so that the child is enabled to build his framework of knowledge intelligently, rather than at haphazard.

Many parents are prone to forget that the fundamental bases of mind and character are laid by the child during infancy. Too often the schools are blamed for failure to develop in the youthful mind habits of thought which should have been implanted there by the parents *before the child had gone to school at all*.

But to present facts, simply as facts, to young children is not an easy matter. They are apt to find such things dull, uninteresting. Only by treating them as steps in a great dramatic story can we hope to enlist the child's interest. We

## PREFACE FOR PARENTS

must do more than tell him that the Pyramids were built; we must show him a dramatic and colourful picture of the people who built them, and why they built them, and how. In this way the imagination of the child is stimulated; he not only acquires his facts, but he begins to think about them, which is, in many ways, far more important, even, than the facts themselves.

There is a tendency in certain groups of educators to frown upon any methods of teaching not strictly scientific. Such groups would bar all fairy tales, all methods of appealing to the imagination of the child not invested with the cold and mathematical accuracy of twice two making four. Yet it may be pointed out that nothing creative can be accomplished in the world, from constructing a mud fort to erecting a Woolworth Building, to say nothing of the great enterprise behind it, *without imagination*. It is a priceless possession, as necessary in inventing a can-opener as in discovering an unknown planet. The Earth's story is a tremendous and imposing drama, and if the writer has made use of imaginary scenes and characters in order to present it interestingly to the

## PREFACE FOR PARENTS

mind of the child, he has done so intentionally, and with no thought of apologising for it. The nomad girl, Nadji, weaving the first coloured rug, the Chinese boy, Ling, inventing the first water-clock, are of course purely imaginary characters. But if, through reading of their adventures, the child comes to understand how and when and why rug-weaving began, and water-clocks came into use, our purpose has been accomplished. He has begun to think about these things; about the great textile industry, about methods of telling the time, and he is able to fit them into their proper places in the structure he is building.

Mere knowledge of facts, without the habit of thinking about them, of applying them, is like the proverbial load of books on an ass's back. Otherwise one might as well attempt to educate the child by requiring him to memorise the dictionary. There is too much of this parrot-like tendency in modern methods of education; too much attention to facts, too little to thinking intelligently about them. Students of a hundred years ago, with a thorough knowledge of half a dozen great books,

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were probably better trained, mentally, than the average child of to-day, with his surface knowledge of everything under the sun, from Abyssinia to zoophytes.

In "The First Days of Knowledge" the writer has attempted to present, in some logical and connected form, the progress of Man's mental and material development during that period which, for want of a better name, we may call the dawn of civilisation. It is his hope that the young reader may find it interesting as well as instructive.

FREDERIC ARNOLD KUMMER.

*Catonsville, Maryland.*





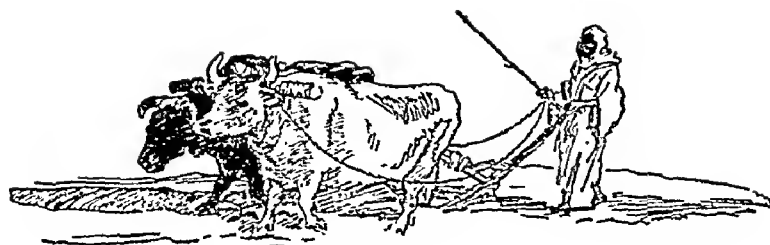
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## THE FIRST DAYS OF KNOWLEDGE



# THE FIRST DAYS OF KNOWLEDGE

## CHAPTER I

### THE THINKERS

MOTHER NATURE and the Sun were looking down at the great round Earth.

"My little people are going ahead very fast now," Mother Nature said. "So many of them are beginning to use their brains—to think."

"I haven't noticed that they are doing very much," replied the Sun, glancing down his long, bright rays.

"That is because you haven't been paying attention to them. The Earth is very small, I know, compared with some of the other worlds you shine on, but if you will watch the Earth

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People carefully, you will see that what I have told you is true."

So the Sun gazed down at the tiny Earth as it turned around and around every day in the sunshine, and this is what he saw.

The people who lived in the valley of the caves had long ago overflowed their first home, and wandering tribes of them had begun to spread all over the face of the earth.

This they had done because, as the years and the centuries went by, there was neither room nor food enough for them all in the valley, nor in the other valleys and hills which surrounded it, and so the strongest and bravest and most daring of them set out across mountains and rivers and plains and even the sea itself, to find new homes where food and game would be more plentiful, and easier to get.

Some of them settled on the shores of the ocean—the Great Water as they called it—and learned to make fish-hooks, and nets of twisted grass, and canoes, and even boats with sails.

Others found homes in fertile valleys, planting and raising grain and sweet roots for food, mak-

## THE THINKERS

ing jars and bowls of clay, burnt hard in the fire, taming animals to work for them and feed them with their milk.

Still others became nomads or shepherds, wandering over the wide grassy plains with their herds and flocks, living in tents, riding wild horses they had tamed, knowing nothing of the sea.

All these different tribes and peoples had learned a great deal. They had fire, and cooked their food over it. They knew how to make fine tools and weapons of flint, how to work in wood and carve stone, how to trap and fish, and hunt with spears and bows and arrows, tipped with flint or bone. And finally some of them discovered the metals, at first gold, and copper, and tin, and later on found out how to make bronze, and brass.

They had begun not only to gain knowledge, but to store it up, and it is this knowledge, stored up by the early peoples so many thousands of years ago that makes it possible for us to be civilised human beings to-day. We owe a great debt of thanks to these early thinkers for what they did for us. Had it not been for them, we would

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all be living like savages. It is to learn the things they discovered, that we go to school. How many children are there who think, when they read a sentence like this, printed on a page, that the minds of millions and millions of men have laboured, in the past, to work out and make possible for us the *simple little letters of the alphabet* in which it is written? For thousands and thousands and thousands of years this has been going on, and everything we see and have about us we owe, in the beginning, to the work and the brains of these unknown women and men. It ought to make us see that the chance to learn what these forgotten thinkers worked out for us is something to be thankful for. We should not look on it as a task. Just suppose we had to work all these things out for ourselves!

These early peoples all over the world, in learning about pottery, and boats, and cattle, and weaving, and glass, were, as we have seen, storing up knowledge for us, but for a long time this knowledge was in constant danger of being lost.

You can easily see that if one tribe found out how to raise grain and make it into bread, and an-

## THE THINKERS

other tribe, wild and fierce, living on the flesh of animals, came along and attacked the first tribe and destroyed it, the things that the people of the first tribe had learned would be lost. And even when a tribe was able to live in peace there was no way for a long time for the older people of the tribe to hand down what they had learned to the younger ones, except by telling them. They could not write down what they had learned in books, as we do to-day, for others to read, because they knew nothing about writing, and such things as books had never been heard of. And in the beginning they did not even know how to speak, as we do now. They had a few words, of course, names for the sun, and fire, and water, and birds and animals, and other simple things of that sort, but they did not have words enough to tell any one how to do this, or that, and the only way the young ones learned how to do things, such as chipping flint or tanning leather, was to watch what the older men and women in the tribe did, and imitate them by doing the same.

So you can see that in the storing up of knowledge in those early days two things were very



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much needed. One—the first one—was a spoken language, words that people could use to tell other people about things, and which the other people could store up in their minds, and remember, and carry away with them to still other people and tribes. For a very long time this was the only way in which the things the first men learned could be preserved and handed down from father to son, from one generation to another.

It was not, as you can see, a very good way. In such simple matters as pottery making, or weaving, or planting grain it was well enough, but when it came to more complicated things, to telling, for instance, of events that had happened before, of what this or that leader or tribe or people had done, it was not good at all, for, as the years and hundreds of years rolled by, the stories that fathers told their sons got warped and twisted and changed, so that in the end they were quite different from what had really happened and not true at all. Some of these stories, or myths, as we call them, we can read even to-day. There is the story of Theseus and the Minotaur,

## THE THINKERS

for instance, or of Achilles, whose mother dipped him in the River Styx, or of Hercules and his labours. They seem nothing but fairy stories to us now, and yet, beneath most of them there must have been, long ago, some grain of truth.

So you can understand that in gaining, and particularly in preserving knowledge, the early men did not have an easy time of it, and it was not until the art of writing became known that true records of things could be kept, and handed down from one generation to another.

We are now going to read about some of the first big steps that the early men took in their search for knowledge, and because these first steps were nearly always taken by persons who used their brains, who *thought* about things, we can call them the Thinkers.

When we remember how much they have done for us, it ought to make us want to be thinkers too, in order to hand down something of value to those who come after us.

## CHAPTER II

### THE WANDERING TRIBES

FROM the time of the early Stone Age, with its tools and weapons of roughly chipped flint, down to the days when Man began the use of bronze, many thousands and tens of thousands of years passed. All through this long period the different tribes of men were slowly spreading over the face of the earth, even to such distant lands as America, Australia and the Islands of the Pacific.

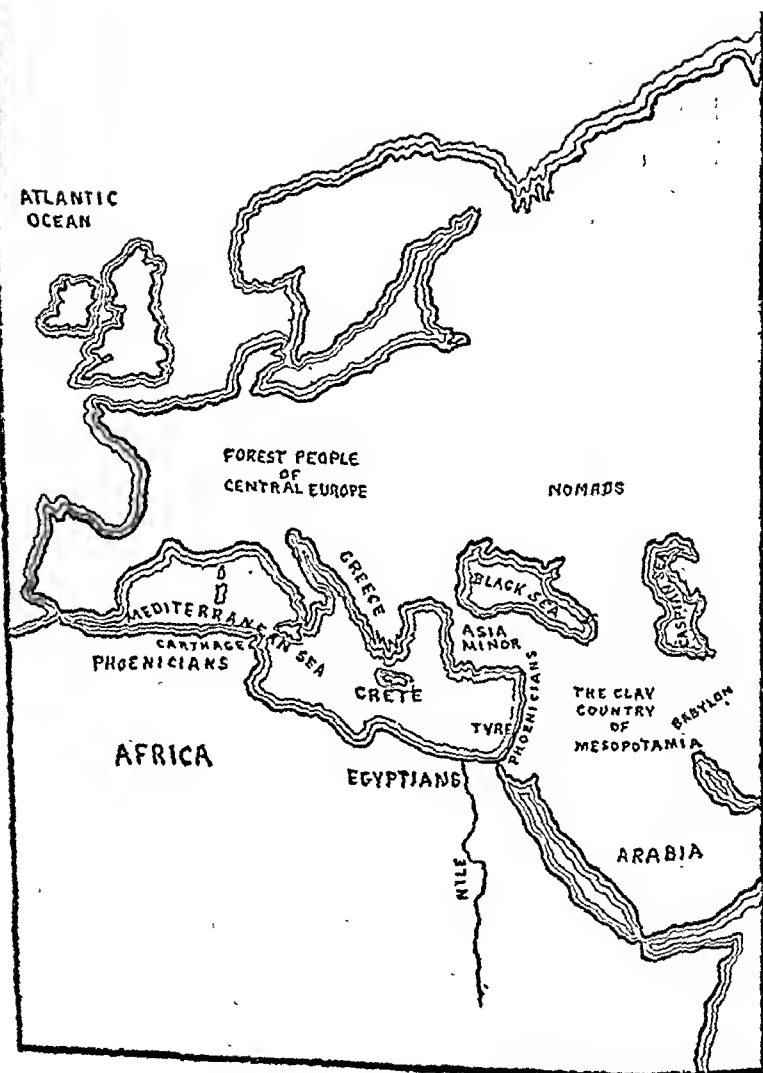
How they got to these far-off countries we do not know, but we do know that in those days the surface of the earth was very different from the way it is now. Many places now covered with water were then dry land. Huge glaciers of ice, spreading out thousands of miles from the poles, took a great deal of water from the ocean. Earthquakes and volcanic explosions raised and sunk

## THE WANDERING TRIBES

continents. Scientists believe that the thousands of islands in the South Pacific are all that is left of a once great body of land extending from Australia to South America. Prehistoric men may have walked on foot around the world. Very, very long ago there were people—wild and savage people—in almost all the warmer parts of the earth.

But it was about the shores of the Mediterranean Sea that men began to take the first steps upward from a savage state. One of the earliest peoples of which we have any knowledge, the Cro-Magnons, roamed through Europe tens of thousands of years ago, hunting, killing wild horses for food, making rude pictures on the walls of their caves. After a time they disappeared, and it is thought that they wandered eastward into what is now Siberia, and may even have crossed to America by way of Bering Straits, to form the ancestors of the Indians, and of the Mayas and Aztecs of Mexico. Of this, however, we cannot be sure.

After them came a dark-haired, dark-skinned race which grew up around the shores of the



EARLY NOMADIC TRIBES THOUGHT TO  
HAVE WANDERED EASTWARD TO  
AMERICA BY WAY OF BERING STRAITS →

NOMADS

NOMADS

MONGOLIAN TRIBES

CHINA

THE CLAY  
COUNTRY  
OF  
MESOPOTAMIA

BABYLON

ARABIA

INDIA

INDIAN  
OCEAN

MALAY  
PENINSULA

EUROPE, ASIA AND AFRICA

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Mediterranean and spread north through western Europe as far as the British Isles, and east all the way to India and the Malay Peninsula.

Soon we find rising from the mists of the past three great civilisations, all beginning in countries close to the Mediterranean Sea. The first and probably the oldest of these began in the clay country of Mesopotamia, between the Euphrates and Tigris rivers, the country of the ancient city of Babylon, as you will see from the map. This far-off civilisation extends back some eight thousand years.

Not very much later, the Egyptians, that great people living along the banks of the Nile, in Africa, began to build a splendid civilisation of their own. Their history, too, as is shown by relics dug from the ruins of ancient cities and tombs, reaches many thousands of years back into the past.

A third great civilisation grew up on the Island of Crete, in the Mediterranean Sea. So far we do not know as much about it as we do of the other two, but enough has been found out to show that the people of Crete were very little if

## THE WANDERING TRIBES

any behind the Egyptians in their knowledge of the arts and in their way of living. They were a rich and powerful nation, and spread their colonies all along the shores of the Mediterranean.

Later came the Phœnicians, a great trading and sea people, who built the ancient city of Tyre, and founded Carthage.

While all this was going on, there had begun to grow, in the forest country of Central Europe, a tribe of fair-skinned, light-haired, blue-eyed people, who lived as barbarians, knowing nothing of the great civilisations to the south of them. Slowly they began to spread eastward, into the mountain country of western Asia, around the Black and Caspian Seas. Later on, as they grew stronger and stronger, they were to move both north and south, and finally form the great white race of to-day.

Upon the wide grassy plains of south Russia fierce nomads grazed their flocks. There were dark-skinned people in India, and Mongolians, with yellow skins, in China, with a very ancient civilisation about which we do not know very



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much. And in the jungles of Africa were the black races, which made no attempt to become civilised at all.

All these places and peoples of which we have spoken you will find clearly shown on the accompanying map.

As you read the chapter about Tubal and his bronze sword, and the other chapters which follow it, you must not suppose that the things you read of all took place at the same time, or in the order in which you find them in this book. In writing about Man's early discoveries in the field of knowledge it is impossible to say that this particular thing was discovered first, and that one second, and so on, because thinking men were at work on almost all these things from the very earliest times, in many different countries and places. But while we do not know the order in which the first great steps in the gaining of knowledge were made, we do know that many thousands of years ago, perhaps four or five thousand years before Christ, men were beginning to write, to invent ways of measuring time, to irrigate their fields and gardens, to weave bright

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coloured rugs, to use metals, to make use of water wheels, and wheels for wagons, to build great temples to their gods, to carve splendid statues, to make music by means of wind and stringed instruments, to use weights and measures and numbers, and to do a great many other things which form the groundwork of our present-day civilisation.

Look at the map as you begin to read about Tubal and his bronze sword. Picture him coming down from the mountain country between the Black and the Caspian seas, cutting across the northern part of the clay country, and arriving at the Phœnician city of Tyre, then just a small village. When Tubal made his journey, civilisation was well under way, not only in the southern part of the clay country, the land of Sumer, of which we shall read later, but also in Egypt, and in Crete. We have told of Tubal first, because the discovery of bronze was of such vast importance to the world at that time.

In the chapter about the water clock we jump all the way to far-off China, a journey which in those days would have taken many months to

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make, if indeed it could have been made at all. Then we come back to the nomad tribes of western Asia, to see how rugs were made.

Again we go back to China, and read about Silver Moon's silk dress, because both the water clock, and the use of silk, we owe to the ancient Chinese.

Then we take a look at the savage, fair-skinned men who were growing up in the forests of Central Europe. They were just barbarians, then, far behind the dark-skinned peoples to the south and east.

Next we go down into the Valley of Clay, the earliest civilisation of all, and see how men began to use the water of rivers to make their gardens grow, and how they made the sun work for them. In the history of the clay country, too, we learn about battering rams, and other weapons of war, and about the beginning of the art of writing on tablets of clay.

After that we read of medicine, of ways of spreading the news, of the traders of Egypt, and Tyre, and Crete, of the sculptors of Egypt and other countries, carving great statues of kings,



TILLING THE SOIL IN ANCIENT TIMES

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## THE WANDERING TRIBES

and gods, of music, and numbers, and many other things.

What you must bear in mind, as you read the different chapters, is not that these things took place one after the other, as you come to them, but that they were all going on at about the same time, some a thousand years earlier, some a thousand years later, but all, during that wonderful chapter in the Earth's Story which extends from the dawn of civilisation down to the beginning of what we call history.

Remember, too, as you look at the map, that practically all knowledge of any importance was being gathered in the few countries you see marked upon it. The great outside world was in darkness, with the possible exception of some small tribes such as the Mayas, in eastern Mexico. It was from the peoples of the countries about the Mediterranean Sea that most of our knowledge has come.

## CHAPTER III

### THE BRONZE SWORD

TUBAL the metal-worker stood beside his forge, a heavy stone hammer in his hand. The anvil at which he worked was also of stone, a great blackened rock with a flat top.

He was a young man, broad-shouldered and strong. About his waist he wore a leather apron, but his arms and chest were bare.

Behind him was a forge, built of rough square stones, and the fire in it was made of charcoal. At one side was a bellows of skins, and when Tubal moved the handle of the bellows up and down, a strong blast of air was forced into the fire, making the charcoal glow with a fierce white heat.

Tubal put down his hammer and took from the anvil a mass of silver-white metal on which he had been beating. It was a lump of tin, and Tubal,

## THE BRONZE SWORD

after looking at it for a few moments, threw it on the ground in disgust. Then he sat down and began to eat some barley cakes and dried goat's meat he took from a leather sack at his waist.

The reason for Tubal's disgust was this. He was a famous worker in metals, and made knives, daggers, hammer and axe heads, and ornaments of many sorts out of copper, and silver, and gold. But try as he would he was not able to make a sword of copper which would satisfy his father and the other men of the tribe. The soft copper blades would bend, and even when ground to a sharp edge on a gritty stone, they would not stay sharp, but soon lost their edges and became dull and blunted.

Copper is a soft metal, and Tubal had never been able to find a way to toughen and harden it. So he was always on the lookout for some new metal, harder than the gold and silver and copper with which he worked.

Whenever travellers from far-off places came through the village he would ask them if they knew of any other metals, but they always shook their heads and told him they did not.

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But the night before there had come to the village a traveller from the south, telling of strange sights he had seen—of dark men who sailed in ships, with oars along the sides, and sails of purple cloth, who lived in a wonderful island across the sea.

One of these men had bartered with him, the traveller said, giving him an armlet of strange white metal, in exchange for a woollen rug. He showed the armlet to Tubal, who bought it from him for a copper axe-head.

The next day Tubal took the bit of strange metal to his forge and began to beat on it with his great stone hammer, but he soon found, much to his disappointment, that the new metal was softer even than the copper with which he usually worked, and of no use at all for making such things as knives and swords. That was why he had thrown it down on the ground.

But as he ate his barley cakes and meat Tubal began to think. He had often, in the past, tried to make new metals out of the old ones, melting together gold and silver, or silver and copper, and



## THE BRONZE SWORD

forging from the mixtures bright chains and girdles, anklets, and handles for knives.

So, finding the lump of tin of no use for sword making, he took it from the ground where he had thrown it and tossed it into one of the tall narrow clay pots or crucibles he used in making and melting up his various mixtures.

To the piece of tin, which was not bigger than the palm of his hand, he added four or five good-sized scraps of copper, and then buried the pot up to its neck in the red charcoal. This done, he began to pump his bellows, singing a queer, wild chant as he worked the bellows' arm up and down.

The strong blast of air soon caused the bed of coals to blaze up. Tubal added fresh charcoal, pumping away until the clay pot began to turn first a deep red, then an orange, and, slowly, grew white hot.

The mixture of copper and tin softened, and soon began to bubble and blaze, giving off tiny flames of green, and yellow and blue. Then Tubal quickly made a little narrow mould in a

## THE FIRST DAYS OF KNOWLEDGE

bed of soft clay, after which he took a flat copper spoon and skimmed from the surface of the molten mixture the scum of dirt which had collected there.

When all was ready he lifted the pot from the fire by means of a pair of hooked tongs and poured the liquid metal into the little trench or mould he had made in the clay.

When the metal had cooled for a while, Tubal, eager to see how the new mixture looked, threw a bowl of water over it and presently lifted it from the mould. It was now a rough, narrow bar, about eighteen inches long and as thick through as his thumb. Tubal took it in his hands, holding it by each end, and tried to bend it, expecting that, like the other mixtures he had made it would be soft and pliable. But, to his surprise, it would not bend the way a bar of copper would have done, but instead held its shape firmly.

Tubal was very much puzzled, for he had never seen a bar of metal like this before. And while he did not yet know it, he had discovered a new substance called bronze, which is made of a mixture of copper and tin. It is a strange fact, but

## THE BRONZE SWORD

none the less true, that two soft metals, such as copper and tin, when melted together, form bronze, which is much harder and tougher than either of them. This new metal, or alloy, as mixtures of different metals are called, was later on to prove of great value to early men. Not only was it suited to making strong, sharp swords, spears and other weapons to be used in war, but it could be made into tools with which to work wood and stone, into arrow heads for the hunters, knives for all sorts of purposes, shields, helmets, bowls, cups, statues and ornaments. In fact, so useful was this new metal that the age in which it was used is often called the Age of Bronze, and came between the late Stone Age and the time when men discovered and began to use that greatest of all metals, iron. But we must not suppose that these different Ages came to all the peoples and nations of the earth at once. Some went ahead very quickly, from stone to copper and bronze, and then to iron, while others were still struggling along with their spears and axes of flint, just as some savage races of the earth are struggling even to-day.

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Tubal took his bar of bronze and thrust it into the fire. Then he blew on the coals with his bellows, singing again the wild song he called the Song of the Sword. Tubal was happy. He felt that he had done a very wonderful thing, in finding out how to make this new metal, and so he sang joyously as he worked.

Presently he drew the glowing bar from the furnace, and holding one end of it in a thick scrap of leather, beat upon the white-hot metal with his hammer, shaping it into a sword.

All the rest of the day he worked, pumping at his bellows, heating and hammering, forging the bar into a flat, curved blade, pointing it roughly, bringing the edges down as fine and thin as his hammer would permit. At last, his work done, he thrust the blade into a jar of water to cool it, and then swung it about in his hand. Some young men of the tribe, returning home from the fields with their flocks, stopped to speak with him, but Tubal did not tell them anything about the new metal he had discovered. This, he felt, was a secret to be kept and guarded very carefully, and only to be handed down to others when he was



TUBAL BEAT THE WHITE-HOT BAR INTO A SWORD

## THE BRONZE SWORD

himself too old and feeble to work any longer at his forge.

The next day Tubal got some flat pieces of coarse, gritty stone and began to polish the weapon with them, working very carefully, first along the thicker, middle part of the blade, then out to the cutting edges, grinding and rubbing, hour after hour, until the sword was bright and clean from end to end, and so sharp that when he whirled it against the branch of a young tree the blade cut through the wood as though it had been soft clay. No copper sword would have done that, he knew, without the edge being turned and blunted, yet the blade of bronze was as keen and bright as before.

Tubal now forged about the upper end of the blade, where the bar had not been flattened, a ring of copper, and above this he fitted on each side a smooth piece of bone, held in place with copper rivets, to form a handle. Then, when all was done, he carried the sword to his father, Lamech, and placed it in his hands.

"For you, my father," he said, "I have forged a sword the like of which no man hath seen be-

## THE FIRST DAYS OF KNOWLEDGE

fore. With it shall you slay your enemies, and cause all men to fear you."

Tubal's father took the sword and looked at it carefully, and what he saw pleased him very much. He strode over to the fire where some of the women were about to kill a young sheep for the evening's meal and told them to stand aside. Then with one sweep of the sword he cut the head from the sheep so cleanly that the animal's body still stood on its four legs for an instant while the severed head fell to the ground. Lamech tested the keen edge of the blade with his thumb, then turned to Tubal.

"Tubal, my son," he said, "from this day on shall you be called the greatest worker in metals among men, for you have done that which no man hath done before."

And this is the story of Tubal, the metal worker, and of the first bronze sword.

## CHAPTER IV

### THE MAGIC METAL

HOR, the head-man of Tubal's tribe, was not pleased when he learned that Tubal's father had a better sword than any he possessed himself. So he sent for the young smith, and received him sitting on a bench in front of his tent.

"Tubal," he said, "make me a blade like the one you have made for your father, Lamech."

Now Tubal was confused, for he knew that what Hor had asked of him was impossible.

"That I cannot do," he replied, shaking his head.

"Why not?" The head-man scowled, for he did not think that Tubal was telling him the truth. "If you can forge one, why can you not forge another?"

Then Tubal told Hor about the magic metal he had bought from the traveller who came from the south, and explained how this metal, when melted



## THE FIRST DAYS OF KNOWLEDGE

with copper, made the copper tough and hard, but still Hor did not believe him, and thought that he wanted his father to have a better weapon than any one else in the tribe.

"Go you forth and search for this magic metal of which you speak," the head-man said harshly, "and come not back before me without it, lest you die by the sword you have made." Then he rose, with a black look, and went into his tent.

Tubal went away, greatly troubled, and sat beside his forge, wondering what he should do. After a time there came to him his half brother Jubal.

"What troubles you, my brother?" Jubal asked.

Tubal told him the story of the sword. And Jubal listened eagerly, for he, too, had envied Lamech the keen blade, and wanted Tubal to make him one like it.

Now Jubal, who spent his days watching his brother Jabal's cattle, had made for himself a pipe of reeds, on which he played sweet music, while alone in the fields, or in the evenings, when

## THE MAGIC METAL

the men and girls of the tribe danced about the camp fires. And he thought a great deal about the strangers who sometimes came to the village, bringing with them ivory, and spices, and sweet perfumes in tiny bottles of glass, exchanging them for leather work, and carpets of wool, and shaggy ponies for their journeys. And when he heard their stories of far-off lands it seemed to him that nothing could be so fine as to go and see for himself all this new and wonderful world that lay beyond the snow-capped mountains to the south.

So when he heard Tubal's story about the magic metal he laughed aloud, and blew a little tune he had made on his pipes, and Tubal gazed at him, wondering.

"Why do you laugh?" he asked.

"From joy," Jubal said, "because of what you have told me. Let us go, O Tubal, you and I together, to seek this strange metal in the far-off lands to the south. We will set out to-morrow, with the rising of the sun."

At first Tubal would not listen, and told his

## THE FIRST DAYS OF KNOWLEDGE

brother he would go alone, but Jubal, with his golden tongue persuaded him, and they made ready for their journey.

The sun had not yet climbed above the hill tops when Tubal and Jubal set out on their small shaggy ponies. They wore caps and belted coats of undyed wool, and their weapons were knives and spears and curved bows made of horn, very short and strong, slung about their shoulders along with many copper-tipped arrows in quivers of leather. Upon a third pony they carried provisions of dried goat's flesh, and cakes of crushed grain, and wild honey in pottery jars, together with a store of knives and ornaments of copper and silver and gold, and bright-coloured jewels to be used in trading with the people of the far countries they expected to visit. So they rode through the narrow pass in the mountains which led toward the south and west.

The way was rough and hard, yet in spite of the rocks, and streams, and forests they were able to follow the narrow trail which had been made by those who travelled between the mountains and the sea. The sun gave them their

## THE MAGIC METAL

direction by day, and the stars by night, and the flames of their camp fires kept wild beasts away.

Here and there along the road they came to tiny villages with people of their own tribe, whose language they could understand. These made them welcome, for it was the custom in those days to treat travellers kindly, and feed them and give them shelter for the night. But after many days the face of the country began to change, the mountain slopes gave way to pleasant rolling hills, and these in turn to a flat country watered by great rivers, where the people lived in huts of sun-dried clay.

These people were not ruddy and fair, like Tubal and his brother, but brown-skinned and smaller, speaking a different language. They, too, wore garments made of wool, but they shaved their heads, and while they had goats and sheep, like the men from the mountains, they did not have horses, although they had seen them, from time to time, ridden by travellers going to and fro between the hill country and the sea.

They were a peaceable folk, and greeted Tubal

## THE FIRST DAYS OF KNOWLEDGE

and his brother kindly, giving them meat, and fruits and wine. And although Tubal could not speak their language, he made them understand by signs that he was a worker in metals, after which they brought their own smiths before him, so that he might see their work. Tubal found gold and silver, and also copper, which they had got by trade, but of the magic tin he sought there was not a trace. Nor could he make them understand what it was he desired.

When Tubal and his brother again took up the trail, they turned toward the west, for the people of the clay country told them that in that direction lay the sea.

For days and weeks they travelled, killing birds and small animals for food, meeting now and then bands of wandering shepherds, with whom they exchanged copper knives and arrow heads for meat and drink. This part of their journey was the hardest, because of the hot winds which came from the desert to the south of them, but they kept on and at last came to another range of hills, beyond which the country swept down in a wide sloping plain to the sea.

## THE MAGIC METAL

All through this plain they found villages, but they were different from the villages of the clay country. Here the people lived in houses and huts built of stone. They were a brown people, like those of the clay country; their hair was not shaved, but short and curly, and their clothing, instead of being made of leather, or wool, was of a white cloth, smooth and shining, called linen, which neither Tubal nor his brother had ever seen before.

They made the two travellers welcome, however, especially when, at night, Jubal played for them on his reed pipes. They too had pipes, and also made music by picking on strings of fine gut, stretched across a wooden frame.

They offered ivory, and linen cloth, and glass work, in exchange for the things Tubal had brought, but everywhere he asked, by signs, for the smiths, and examined their work for some trace of the magic metal he sought. But he could find none.

At last they came to a place beside the sea, a small village of stone, built partly on an island, with stone walls about its sides and a causeway

## THE FIRST DAYS OF KNOWLEDGE

leading from the island to the shore. Along this causeway, and in the water about the island were anchored many boats, with oars and sails. It was the first time the two brothers had ever seen so vast a body of water and they stood for a long time in silence gazing at it. The water they saw was the Mediterranean Sea, and the village on the island was later to become the great city of Tyre. Now the town was a very small place, but to Tubal and his brother it seemed marvellous indeed, after the villages of tents and mud huts to which they were accustomed.

The people, too, were more civilised than those of Tubal's tribe; their clothing was finer, their jars and bowls of pottery were smoother and better made, with figures painted on them in bright colours, men, and girls dancing, and animals, which the two brothers greatly admired. They made glass, too, which the people of Tubal's tribe did not know how to make, and worked it into beads, of brilliant hues, and bottles, shining like the tail feathers of a peacock. In this place Tubal and Jubal saw many strange and wonderful things, but the most wonderful of all,



THE PEOPLE OF THAT COUNTRY MADE WONDERFUL  
[55]



## THE MAGIC METAL

to them, were the purple-sailed ships. It was from a sailor on one of these ships, Tubal remembered, that the traveller had obtained the armlet of tin.

He and Jubal went down to the stone wharves where one of these vessels lay. They had found, by chance, a man from their own country who had wandered away and now lived by the sea, and this man they took with them, so that he might speak for them, and tell the men on the ship what it was they wished.

The vessel, built of wooden planks, was as long as eight tall men, with bow and stern rising high out of the water. A row of oars along each side was manned by sailors who sat on benches; strong brown fellows, bare to the waist, with curly hair and rings of gold and silver in their ears. In the middle of the boat rose a short, stout mast, across which was a spar or yard, carrying the sail. Tubal's guide told him the ship came from the Wonderful Isle across the water to the west, trading fine pottery, and glass, and metal work in exchange for wool, and copper, and cedar wood and other things they did not have on their

## THE FIRST DAYS OF KNOWLEDGE

island. These people, Tubal's guide said, were the greatest metal workers in the world, but they had to get the gold and other metals in which they worked from other lands, as they did not have any in their own.

This disappointed Tubal very much, for he had hoped to find his magic metal on the Wonderful Isle. But when he went on board the ship, and asked the sailors, through his guide, about it, they shook their heads, not knowing what he meant.

After a time the captain of the ship came up, a powerful man with bright, smiling eyes. When he heard Tubal's story of the armlet of tin he went to his cabin below the decks and brought out a large drinking cup, which he placed in Tubal's hands.

At first Tubal thought it was silver, but when he had weighed it in his hand, and scratched it with his copper knife, his heart gave a jump, for he saw that the cup was made of the metal he sought. But the total amount he held in his hand was little more than enough to make a

## THE MAGIC METAL

single sword, even when mixed with eight or ten times its weight of copper. He wanted much more than this, and told the captain so.

"Where does this strange metal come from?" he asked.

The captain smiled.

"Some has been brought to us from the spice islands to the south," he said. "And some comes from the grey north, where there is an island, smiling and pleasant in the summer time, but cold and dark in the winter. Our ships which go out through the narrow straits into the great ocean sail north, keeping close to the land, and at last come to this island, trading with the barbarians who dwell there, and bringing back such things as they have to barter. Among them are many rude ornaments, armlets and the like, made of this strange metal, but the smiths of my country find small use for it, save in making such things as this drinking cup you see, and even for that they like gold and silver better. From the far-off south, too, as I have told you, this metal is sometimes brought by black men and brown,

## THE FIRST DAYS OF KNOWLEDGE

along with ivory, and gold, and sweet-smelling woods to burn as incense before the gods. What need have you of so worthless a thing?"

Tubal laughed and stretched his brawny shoulders.

"I too am a worker in metals," he said, "making knives, and spear points and swords of copper, such as you have often seen. But with this white metal you set such small store by I can forge you a blade that will cut through wood or bone as though it were softest flesh, and leave the edge as keen as before."

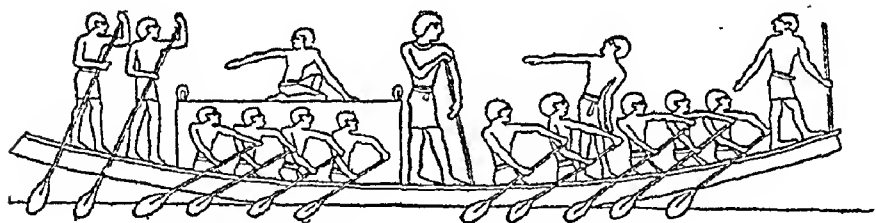
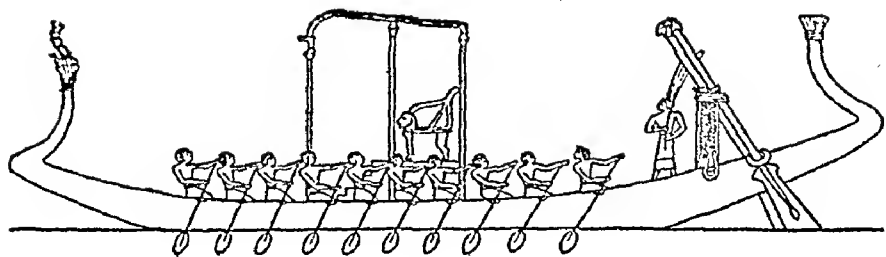
The captain marvelled at Tubal's words.

"If you can do this," he said, "the which I doubt, then would you be the greatest smith among men."

"I can do it," Tubal replied, and his brother Jubal nodded his head.

"Then come with me to my country," the captain said, "and if you can do what you claim, my people will give you great honour amongst them, and set you above all the smiths of the land."

So Tubal and Jubal bartered their horses for



ANCIENT EGYPTIAN SHIPS

## THE MAGIC METAL

copper, wherewith to make swords, and with their guide took passage on the purple-sailed ship for the Wonderful Isle that lay across the water to the west.

For six days and nights they sailed, and on the seventh day they came to the shores of the Wonderful Isle, which we now call Crete. Thousands of years ago there were men living on that island, building houses and palaces and temples as old as those of ancient Egypt, some people think. Later on the men of Crete were to become one of the great nations of the earth, but at the time Tubal and his brother went there they were just beginning to gain the knowledge of pottery and glass-making, of metal-working, of carving in wood and ivory and stone which was later to make them so famous.

The captain of the ship took Tubal before the ruler of the city to which they came, a city built of stone, at the edge of the sea, and explained that he was a worker in metals from a far country, and claimed to be able to make sword blades so strong and keen that they would cut through wood and bone without being blunted.

## THE FIRST DAYS OF KNOWLEDGE

The ruler of the city looked at Tubal for a time in silence. Then he called to him his most skillful smith.

"Take this stranger to your forge," he said, "and give him whatever he may need."

"I ask but one thing," Tubal said, speaking through the guide he had brought with him, "which is that I work alone, lest others find out my secret."

To this the ruler of the city agreed, and Tubal, taking the copper he had brought, and the drinking cup of tin the captain had given him, went to work.

All that day and the next he spent beside his forge, scarcely stopping to eat, and on the afternoon of the second day he came before the king, bearing in his hands a sword of bronze, with a handle of ivory and gold.

"It is done," he said, and laid the weapon at the king's feet.

The ruler took it up, and saw that the workmanship was good. Then he felt its shining edge, laying it beside his own sword of red copper.

## THE MAGIC METAL

"How shall I know which is the better?" he asked.

Tubal took the king's sword and placed it in his brother Jubal's hand.

"Hold it here, edge up, upon this block of wood," he said, taking the sword of bronze in his grasp.

High above his head Tubal raised the heavy blade, then brought it down with all his strength upon the upturned edge of copper. With a clash the two met, and all those about set up a shout at what they saw. For the weapon of bronze had cut clean through the blade of copper, shearing it in two, so that the parts of it fell to the ground. Then he handed the bronze sword, unharmed, to the king.

The latter took it, and rising, placed his hand on Tubal's shoulder.

"Above all workers of metal in my kingdom shall you be honoured," he said, "and in return I command that you depart not from it, lest your secret be given to others."

So Tubal and his brother Jubal dwelt on the Wonderful Isle and made bronze swords for the



## THE FIRST DAYS OF KNOWLEDGE

men of Crete. Because of the new metal these people were not only able to win many victories over their enemies, but to work in wood, and metals and stone as none had worked before them. But after a time the secret spread to other countries, and all around the shores of the great inland sea men began the use of bronze.

Centuries later another and even more magical metal was discovered by the early peoples, stronger and better for all sorts of weapons and tools than bronze. This metal was iron, and when Man began the use of iron and steel, it soon took the place of bronze for most purposes.

The first iron was probably found in lumps, just as gold and silver and copper were found, and it was of course very rare, and used mostly for ornaments. But after a while the early peoples found out how to get iron and other metals from their ores by smelting—that is, by heating the ores in a furnace until the pure metal was melted and ran out in a liquid stream. And since there is plenty of iron ore all over the world it was not long before iron began to take the place of anything else for making weapons and tools.

## THE MAGIC METAL

But before the discovery of iron, men used bronze, and its brother, brass, made of copper and zinc, for thousands of years. It is still used for making statues, and ornaments, and many other things.

## CHAPTER V

### THE WATER CLOCK

ONCE upon a time, thousands of years ago, there lived on the banks of the Yangtze River in China a wealthy man named Fu-chi.

This Fu-chi had many servants who cared for his house, or looked after his cattle, or worked in his fields, and because he believed that time was a precious thing, like diamonds, he tried to make good use of every minute of it, and insisted that his servants should do the same.

From morning to night he was busy, inspecting his stables and fields, giving directions to his overseers, receiving his visitors, going over his accounts. And in order to know what time it was, he caused a great bronze sun-dial to be set up in the garden of his house, beside which sat a slave boy. As the sun-dial marked the hours from sunrise to sunset, this slave boy,

## THE WATER CLOCK

whose name was Ling, would strike them on a bronze bell beside him with a wooden mallet.

A sun-dial, as perhaps you may know, is an instrument used for telling the time, just as we now use clocks. You could make a very simple one by setting up a stick in the ground, and marking its shadow on a smooth floor of earth or clay.

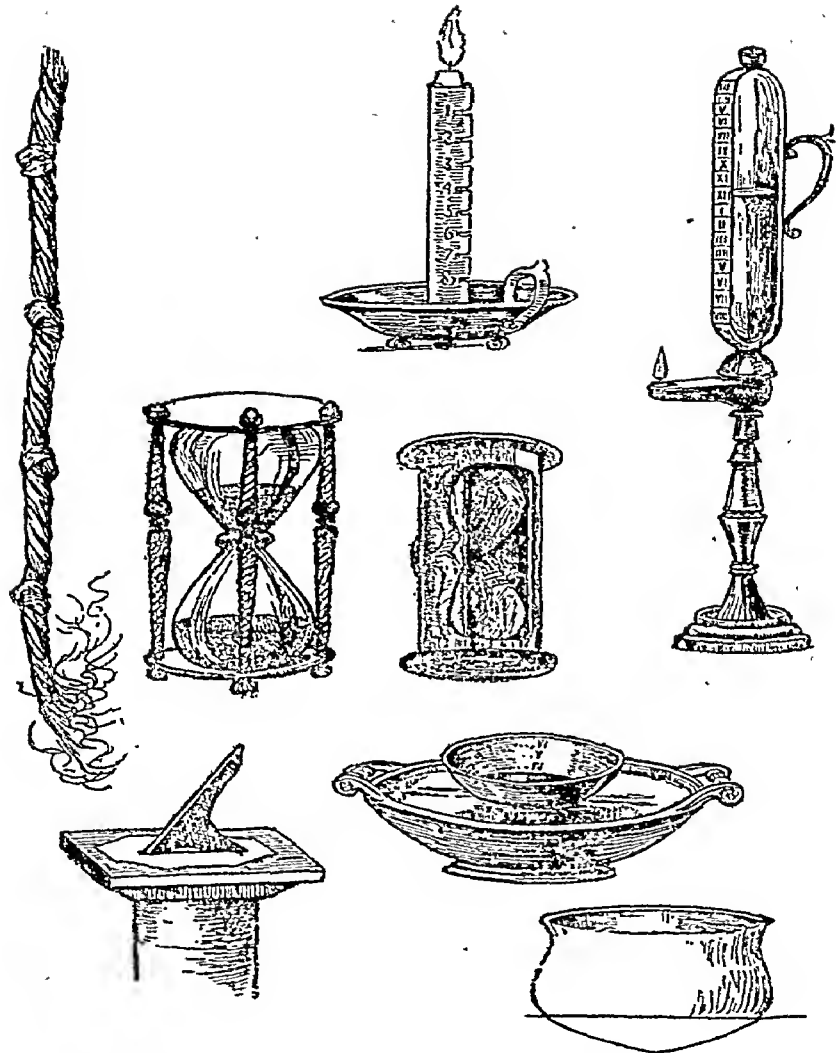
A day, of course, is the length of time between one sunrise and the next, that is, the length of time it takes the earth to turn around once on its axis, or twenty-four hours. The early peoples divided the hours between sunrise and sunset into four watches or quarters, so that the time from say six o'clock to nine was called the first quarter, from nine to twelve or noon the second quarter, from noon to three o'clock the third quarter, and from three till sunset the fourth quarter. They guessed at the time by looking at the sun, to see how high in the heavens it was, and at night they did the same thing, measuring the quarters or watches by the moving of the stars. You will find these quarters or watches often spoken of in the Bible.

## THE FIRST DAYS OF KNOWLEDGE

Later on, each quarter was divided into three parts, or hours, making twelve hours for the day and twelve for the night.

Now it is not so easy to guess the hour of the day by just looking at the sun, so the early men found a better way. They saw that a tall tree, or a rock, or a stick set up in the ground cast a shadow, and they also saw that this shadow is shortest at noon, when the sun is overhead. On the equator, where the sun is exactly overhead at noon, there would be no shadow at all, but in countries north and south of the equator there would always be some shadow at noon, but it would be shorter, then, than at any other time of the day, and longest, of course, at morning and night. So the early men learned to tell the time roughly by marking the shadows cast by trees, or rocks, or sticks.

Now suppose you were to drive a peg in the ground near your upright stick to mark the length of the noon shadow, and other pegs to mark the shadow when the sun was half way up to noon, and half way down to sunset, you would be able to tell, roughly, the four quarters of the



#### EARLY WAYS OF TELLING THE TIME

The Knotted Rope, the Marked Candle or Lamp, the Sundial, the Hour Glass, the Water Bowl.

## THE WATER CLOCK

day. It would not be very exact, because in winter the sun rises later and sets earlier than it does in summer, but still it would be better than no way at all. And of course the distances from the noon shadow to the shadows at the two quarter points would be very long.

But suppose you were to set up your stick in the middle of a large round bowl, with the top of the stick just level with its sides. When the sun was just rising, its rays would be level, and would therefore go right across the top of the bowl and cast no shadow of the stick at all. But the moment the sun got a little higher, the shadow of the stick would begin to creep down the other side of the bowl, getting shorter and shorter till noon, and then growing longer and longer again until sunset, and you could mark the hours on the inside of the bowl and use it to tell time with. That would be much easier than bothering with shadows half a mile or more long.

The early peoples soon found out how to make sun-dials that would tell them the time. And they also found out that on two days in the year, one in March, and one in September, the days

## THE FIRST DAYS OF KNOWLEDGE

and nights are exactly equal in length. These two days are called the equinoxes, because equinox means equal night, and so the early men marked their rude sun-dials on these days, so as to have them correct. All this may sound very complicated, but the main point is that these early peoples used the shadows cast by the sun to tell the time of day. And the instruments they used we call sun-dials.

This did well enough, in the daytime, when the sun was shining, but at night, when there was no sun, it did not do at all. So some of the early people found a way of telling the time at night by means of a burning rope, with knots in it.

They found out, by trying it in the daytime, how long a piece of rope would be needed to burn, let us say, six hours, that is, from six o'clock till midnight. Then they would divide this piece of rope into six equal parts, by means of knots, or by bits of string or other marks tied on it. Then the rope was lit, and as each mark was reached, they knew that another hour had passed. Later on, when candles came into use,



## THE WATER CLOCK

the same thing was done with them, marks being painted on their sides to show the passing of the hours as the candle burned down. Neither of these ways was very accurate, because the candles or ropes would sometimes burn faster, and sometimes slower.

Now this Fu-chi of whom we have spoken was not only very busy during the day, but in the evening, too; he liked to make good use of his time. So he had a way of dividing the evening up into different periods, for music, for conversation with friends, for study, for meditation, for prayer. But because no one knew just what time it was, these periods were always getting mixed. Friends would come to talk with him while he was in the midst of his studies, or the flute players would begin to play just when he was ready for prayers, so that his arrangements for the evenings were always being upset. So one day Fu-chi went into his garden and calling all the members of his household about him, spoke to them, saying:

"I, Fu-chi, will give to him who shall find a

## THE FIRST DAYS OF KNOWLEDGE

way to mark the hours of the night, as the sundial marks them by day, honour and riches beyond all of my servants."

Among those who heard the words of Fu-chi was Ling, the mallet boy, who sat beside the sundial in the garden. No one had noticed him, yet the promise made by his master sounded as fairly in his ears as it did in the ears of the overseers and the musicians and the makers of pottery and all the other important persons whom Fu-chi had summoned to his meeting. Nor, whispered Ling to himself, could words, once spoken, be taken back again. He, a slave boy, might have riches and honours, if he could find a way to mark the hours of the night.

So Ling, sitting beside the great sundial, thought and thought all through the hot sunny day, but no way to do what Fu-chi desired came to him.

At last a slim slave girl, whose name was Yoto, came from the house and going to the pool in the garden dipped up some water in a jar she carried on her shoulder. And Ling looked after her, for she was fair as an iris flower in his sight,

## THE WATER CLOCK

and her smile was like the new moon. As she passed the sun-dial on her way back to the house, the jar of water on her shoulder, Ling was just striking the third hour of the afternoon on his bell.

Now this slave girl liked to tease Ling, so she glanced toward the house, and seeing that no one was looking she set the jar of water down on the stone base of the sun-dial and began to poke fun at him, asking him what he meant to do with all his money, when he found out a way to tell the time by night.

As Ling finished the third stroke upon his bell, he happened to notice that Yoto's water jar was cracked, so that a tiny stream came from it, falling drop by drop upon the flat stones beneath. The sight held his attention firmly, so that he scarcely heard the slave girl as she gossiped on. And because Ling was silent, and made her no reply, Yoto became angry, and tried all the harder to tease him, so that many minutes passed, and the shadow of the sun-dial moved the width of Ling's two fingers.

At last Yoto grew tired of her game, and

THE FIRST DAYS OF KNOWLEDGE

stooped to pick up the jar of water, but Ling stopped her.

"Your jar is cracked, Yoto," he said. "See—already it has lost a quarter of its contents. Leave it and fetch another, lest your mistress punish you for spilling water on her polished floors."

The girl looked down and saw that Ling spoke the truth, so she hurried into the house and, bringing out a second jar, filled it at the pool and went her way. But Ling sat staring at the water which had dripped from the cracked jar to the stones beneath, and a look of wonder shone in his eyes. When at last the time came to strike the fourth hour on his bell, he took the broken pot and poured the little water that still remained in it upon the ground. There was a bright smile upon his face as he struck the four strokes upon his bell, for in that hour Ling had found out a way to mark the passing of time by night.

One evening, a few days later, Ling sounded the sunset hour upon his bell, and throwing down his mallet went to Fu-chi, who sat in the garden

## THE WATER CLOCK

enjoying the cooling breezes. Before him Ling bent humbly.

"Honourable Master," he said, "I, Ling, the sun-dial boy, can show you how to mark the hours of the night."

Fu-chi folded his ivory fan and gazed at Ling coldly.

"You?" he asked, frowning. "How shall an ignorant boy do that which the wisest men of my household are not able to do?"

"That I ask permission to show you, August One," Ling said modestly, but there was a smile of confidence in his eyes.

"Very well. And if you fail, fifty lashes and a bleeding back for your reward." Fu-chi fluttered his fan sharply, and lay back in his teak-wood chair.

Ling went to a corner of the garden, where he slept beneath a roof of matting, and lifting in his arms a large earthenware jar carried it to the place where Fu-chi sat and placed it on the ground before him. In the side of the jar, close to the bottom, a tiny hole had been pierced, and

## THE FIRST DAYS OF KNOWLEDGE

in this hole was a wooden plug. When he had set the large jar before Fu-chi, Ling brought a second and smaller jar, and with it filled the larger one to the brim with water. Then he went again to his matting hut and brought back a bit of soft wood, round and flat like a pancake, from the centre of which rose a slender white willow wand, about the thickness of his little finger. Around this wand were tied at equal distances apart six bits of coloured string, the first white, the second yellow, the third red, the fourth green, the fifth blue and the sixth black.

Going up to the jar Ling set the flat piece of wood afloat on the surface of the water in it, and bending down, took the plug from the little hole, so that the water in the jar began to trickle out very slowly on the ground.

"Master," he said, "this is my way to mark the hours of the night."

But Fu-chi, who saw nothing but a jar of water with a willow wand rising from it, became angry, and looked at Ling with a frown.

"What nonsense is this?" he cried. "How shall a jar of water mark the time?"

## THE WATER CLOCK

"In this way, Illustrious One," said Ling quietly. "Through the little hole in the bottom of the jar the water, as you see, slowly runs out. When the first hour of the night has passed, the water in the jar has sunk so much, carrying the float, and the willow wand down with it. I watched it, this morning, beside my sun-dial, and when the first hour had passed, I marked the point on the willow wand by tying about it a white cord, which was then just level with the top of the jar. When the second hour had passed, I marked the place on the willow wand with a cord of yellow. At the third hour the red cord will be just passing out of sight, and so on until midnight, when all the cords will be hidden save only the black. By that time the jar will be almost empty, and must be filled again. Have I done well, Illustrious Master?" Again Ling bowed his head before Fu-chi.

The great man sat for a long time gazing at the jar before him, watching the willow wand as it slowly sunk from sight. Minute after minute passed, and Ling wondered at his master's silence, but still Fu-chi did not speak. Only when

## THE FIRST DAYS OF KNOWLEDGE

the white cord was level with the edges of the jar did he stir.

"It is the hour for music," he cried, clapping his hands. "The second hour of the evening. Let the musicians be summoned, and all my household brought before me."

Every one came running, and Yoto, the slave girl with them. Then Fu-chi spoke.

"Listen, all of you, great and small," he cried, "Ling, my mallet boy, who strikes the hours of the day beside the sun-dial, has found a way to mark the hours of the night. No longer shall he be a slave, but a free man from this day on. Let there be music and feasting, that all may do him honour." Then he turned to Ling. "Boy," he said, "if you have any wish, speak, that I may grant it."

Then Ling went over to Yoto and took her by the hand.

"I wish, Master," he said, "that Yoto may also be free from this night on, and that I may have her for my wife."

"It is done," said Fu-chi. "Let the musicians play."



## THE WATER CLOCK

So Ling, the mallet boy, won the hand of Yoto, and made the first water clock.

It was four thousand years, before men were able to improve on Ling's water clock by making a coiled spring, as it unwound, turn the hands on the face of a watch or clock, so that each turn around the clock face marked the passing of an hour. Indeed, there is a water clock something like the one Ling made in the city of Canton, China, to-day, which has been in use there for over three thousand years.

Anything that moves regularly can be used as a measure of time—the turning of the earth, the sinking of water as it runs out of a jar, the sand, trickling slowly from one end of an hour-glass to the other, the uncoiling of a coiled spring, the turning of a wheel by means of weights, such as are used in grandfather's clocks. But it took man a long time to go from the shadow of a rock to the beautifully made watch, with its delicate steel wheels, its bearings of jewels that will not wear out. These things we owe to thinkers, like Ling, who used their brains.

## CHAPTER VI

### THE BRIGHT RUG

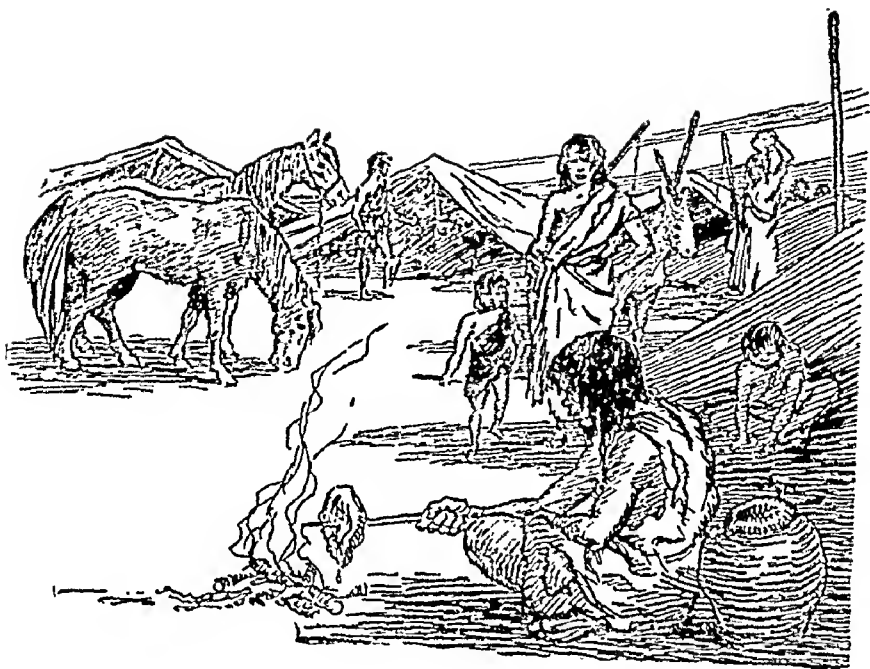
ONCE in the far-off days before the beginning of history, there lived in the mountains of Asia a wandering tribe of shepherds.

The chief of this tribe was named Tamar, and among his many children was a little girl called Nadji.

Now even though she was the chief's daughter, Nadji, like the other girls of the tribe, had a great deal of work to do. And the thing which Nadji did best was weaving.

She had been taught to weave by her mother, and in all the tribe there was no one who could make such smooth, fine cloth.

The country in which Nadji's people lived was cold, especially in the winter time, for it was high land, a country of great plateaus, cut by wide valleys, and surrounded by mountains, some of them covered with snow. And because it was



NADJI'S FATHER WAS CHIEF OF A NOMAD TRIBE

## THE BRIGHT RUG

cold, the people had great need for warm coats and caps to wear in the daytime, and thick rugs to wrap themselves up in when they were asleep at night.

So the men would clip the long silky wool from the sheep at shearing time, and bring it to the women and girls to wash. And the women would carry the wool in great bales, balancing them on their heads, down to the banks of the stream, just as their mothers and grandmothers had done for centuries before them, and wash the wool in the clear running water until all the dirt and grease had been scrubbed from it, leaving the wool white and fresh and clean. Then they would spread it out in the sun to dry.

After that the old women would sit hour after hour picking and combing the wool with wooden combs, and then twisting the long fibres into flossy yarn or thread. They did not use a spinning wheel for this, as our great-grandmothers did, but spun the twisted thread on a short stick, with a stone or a lump of clay at the end of it, to make it turn more easily. Then with these twisted threads the younger women and girls

## THE FIRST DAYS OF KNOWLEDGE

would weave thick warm cloth, for clothing, and saddle bags, and sleeping rugs.

The first peoples learned how to weave a very long time ago, as we have seen in "The First Days of Man," making use of twisted grasses in the beginning, and later on the hair or wool from the skins of animals, and the fibres of plants. But of all the things they used, wool, from the sheep, or hair from the backs of certain kinds of goats, made the warmest cloth. So the tribe of Tamar used wool, in their weaving.

This weaving they did on what is called a loom. In the early days a loom was made by placing a round pole across the crotches of two trees or posts. From this round pole were stretched close together, side by side, the threads or cords which form what is called the warp. These threads were fastened at the bottom to another round pole, the weight of which kept the threads of the warp stretched tight.

In and out across these up and down threads were woven the weft, or woof, just as children in kindergarten weave basket-work mats of strips of paper or straw. This was the earliest form of

## THE BRIGHT RUG

weaving machine, or loom. Later on men improved this simple device, by using flat sticks across the warp to separate the alternate threads, instead of going in and out around each one with a needle, and in this way, by pushing half of the warp threads forward, and the other half backward, all at the same time, they could shoot the thread of the woof right across the loom with one throw, using for this a smooth bit of wood called a shuttle. The same principle is used in the great power looms in our cloth factories to-day.

It was a simple loom such as the one described above that Nadji used in weaving her rugs, and the things that she made were very thick and warm.

For the most part they were woven of white or undyed wool, for in the early days the people thought only of keeping themselves warm, and a white rug would do this just as well as a coloured one.

Now Nadji loved the deep blue of the sky, and the yellow of the sunlight, and the red leaves of the flowers, and all things that had colour and beauty. The white wool, which was sometimes

## THE FIRST DAYS OF KNOWLEDGE

a dirty grey because of the fleece from black sheep which was mixed with it, and sometimes brown because of dust blown by the wind, did not please her.

So as she sat working at her loom, she often thought how nice it would be to weave into her rugs the blue of the sky, and the red of the flowers, and the yellow of the sunlight. But because nobody had ever done such a thing, Nadji kept on for a long time weaving only in white.

Now there was an old woman in the tribe who took care of people when they were sick, and she knew the secrets of roots and herbs and leaves and bark, and boiled these things in water to make medicines, tea for those who had fevers, salve for wounds, lotions to rub on bruises, and many other things of that sort.

From the leaves of the wild indigo plant she was able to make a wonderful blue, and from the roots of the madder, a beautiful red, and from the wild sumac bushes a deep golden yellow, and sometimes she would boil bits of woollen yarn in these colours, washing them afterwards in alum or soured milk, so that when the yarn was dried

## THE BRIGHT RUG

in the sun the colours would not wash out again, but remained fast in the wool.

These bright-coloured threads the women would tie in their hair, or use to string beads on, and the men would make plumes for the bridles of their horses, or for their spear shafts. But so far no one had thought of using these coloured yarns for making rugs, because they looked on rugs as useful things, to keep them warm, and not as things which could be beautiful as well.

One day Nadji went down to the place where the women were spinning to get some fresh wool for a rug she was making, and on her way she passed the hut of the old medicine woman, whose name was Adah. In front of the hut the old woman had hung out some bright-coloured yarns to dry, and Nadji stood for a while gazing at the wonderful blue, and the beautiful red, and the golden yellow, all glowing brightly in the sunshine. As she stood there, the thought came to her, why should she not weave those beautiful colours into a rug?

So, without saying what she meant to do, Nadji, who was the chief's daughter, spoke to the



## THE FIRST DAYS OF KNOWLEDGE

old woman, telling her that she wanted a ball of the blue yarn, and of the yellow, and of the red.

"My father will give you new wool, of twice the weight, for that which I have taken," she said, and with the bright-coloured yarn in her arms she went back to her loom.

The warp for her new rug was already in place, and she had woven in white a space as wide as her two hands at one end of the rug. Now she began to think how she might make a pleasing pattern with the colours she had brought.

First she wove back and forth many strands of red, making a space across the rug as wide as her palm. Then she took up the yellow ball and wove with that, and soon there showed a wide band of gold, beneath her flying fingers.

Next came the blue, deep as the skies, and what Nadji had done pleased her greatly, for she saw in her work the bright colours of the rainbows which sometimes hung over the mountain tops after a storm. And as she wove she thought of Jal, the son of Kish, a young man of the tribe who sometimes smiled at her, and her song was a song of love.

## THE BRIGHT RUG

Again she took up the yellow ball, and shot the golden thread back and forth until it was all used up, so that the centre of her rug was gold.

Twice, before her work was done, she went back to Adah for more yarn, but when the old woman asked her what she was doing with it Nadji laughed, and would not tell her.

At last, when all was finished, Nadji took the rug from her loom, and throwing it about her shoulders, went toward the tents. She was very proud of what she had made and wanted every one to see it.

As she came near the camp fires, all the men and women looked at her in surprise, and some of them laughed, while others gathered about admiring the beautiful thing she had woven. In the fire-light the colours of the rug gleamed like gold, and sapphires and rubies. But Nadji was thinking of Jal.

Presently she saw him, sitting before his tent, and going up to him, Nadji laid the rug at his feet.

"For you, Jal, son of Kish," she said, casting down her eyes.

## THE FIRST DAYS OF KNOWLEDGE

When Jal saw the beauty of the rug he marvelled at it, and took it in his hands, admiring its bright colours. Then Tamar, Nadji's father, hearing the noise, came out of his tent and seeing the rug in Jal's hands took it from him. It pleased him so that he desired it for himself, and not knowing where Jal had gotten it, offered to buy it from him, saying that he would give in return anything that Jal might ask.

Then Jal looked at Nadji and to him she seemed even more beautiful than the bright-coloured rug, so he spoke to Tamar, saying:

"For my rug of many colours, O Tamar, there is but one price, and that is the hand of the weaver who made it." And Nadji blushed as red as the red in her rug, and her eyes were as blue as its blue, and her hair as golden.

"She is yours," Tamar said. "Who is the weaver?"

"She stands before you," said Jal, and took Nadji's hand in his.

Then Tamar gave a great laugh and threw the rug about his shoulders.

"The word of Tamar is given," he said. "Take

## THE BRIGHT RUG

her, and care for her well." So did Nadji weave the bright rug, and win the man she loved.

But the rug that Nadji made was only a beginning. Before long other weavers found out how to make new and more beautiful designs and patterns. Instead of weaving plain bands of colour across their rugs they learned, by changing the colours often, and later on by tying into the warp bright bits of yarn with the loose ends of the knot sticking up, to make the wonderful patterns we see in oriental rugs to-day. All the quaint little figures and designs in these rugs have a meaning. For instance, in some rugs you may see the form of a bee, or a palm tree, which mean immortality, or of a lotus flower, which stands for the sun, or of a lion, or hawk, which represent power, or a zig-zag, which means water, a pine cone, which means fire, or a wheel, which is the symbol of God.

The study of these rugs is a very interesting one, and some of the most wonderful of them are centuries old, and took many years to make. They are also very valuable, even small ones often being worth thousands of dollars.

## THE FIRST DAYS OF KNOWLEDGE

Rug-making is older than the earliest civilisation we know, older even than Egypt, or Babylon. Rugs are made in all eastern countries, in Persia, in India, in China. The Chinese rugs are noted for their soft golden tones, and their wonderful blues. The most valuable rugs of all are made of silk. In countries such as Turkey, where the Prophet Mohammed is worshipped, men kneel at the hour of prayer upon their prayer rugs, wherever they may be, even in the streets, and you can always tell a prayer rug because it will have at one end of it an arch, which represents a Mohammedan mosque, or church.

All these oriental rugs are made by hand, the patterns being handed down from father to son for hundreds and even thousands of years. Because they are made by hand, and because the wool used is longer and finer and more silky, and because the vegetable dyes are better and more durable and lasting than those our chemists make from coal tar, these oriental rugs can never be equalled by modern machinery. They are beautiful works of art, to be prized and taken care of like fine tapestries, and paintings, and books.

## CHAPTER VII

### SILVER MOON'S SILK DRESS

LITTLE SILVER MOON sat in the palace garden, weeping.

She had played with all her toys, that morning, and was tired of them, and because she had broken her mother's best mother-of-pearl fan, she had been severely scolded, and sent out into the garden to play. Little Silver Moon had to do as she was told, of course, for her mother was Si-Ling-Chi, Empress of China, and wife of the Emperor Huang-ti.

All this happened a very long time ago, nearly three thousand years before Christ, but even in those far-off days little girls were supposed to obey their mothers and not break their fans.

Silver Moon sat on a stone bench beneath a clump of mulberry trees. She sat there a long time, and because she had nothing else to do she allowed her eyes to wander over the broad leaves

## THE FIRST DAYS OF KNOWLEDGE

of one of the mulberry trees, watching the fat, hairy, cream-coloured worms, with eight legs along each side of them, which were greedily feeding on the leaves. But Silver Moon was not fond of worms, especially such ugly, fat ones, and so she did not pay much attention to them.

As she looked at the branches of the tree, however, she saw something that interested her more. One of the fat, hairy worms had attached itself to a slender twig and was spinning a thin web like the web of a spider, forcing out of its body a tiny stream of liquid, finer than a hair, which hardened as soon as the air struck it into a delicate, gossamer thread.

But what interested Silver Moon most was not this thread so much as the fact that the little worm, instead of spinning its web between the twigs and branches, as a spider would have done, was winding itself up in it, round and round, like a spool of cotton. Silver Moon thought this was very queer indeed.

Presently, on looking closer, she saw many more of these funny little spools, round and soft looking, and somewhat the shape and colour of a

## SILVER MOON'S SILK DRESS

fuzzy fat peanut. She thought it a strange thing, that these worms should wind themselves up in such a tight wrapping, and wondered if after they had done it, they died.

But soon she saw something else happening to one of the fat spools, or cocoons, as they are called. It was slowly bursting open at one end. Soon there crawled out of it a large, cream-coloured moth, like a butterfly, which sat on a leaf and spread its silvery wings in the sun to dry. So Silver Moon knew that the ugly worm, in the strange house it had made for itself, did not die, but changed instead from a worm to a butterfly.

Very carefully she reached up and plucked the cocoon from the twig to which it was attached. At first she tossed it up and down like a ball, but soon she grew tired of this, and began to pick it to pieces by unwinding the filmy thread which the worm had so carefully wound itself up in.

Yard after yard she unwound, reeling it off very gently so as not to break it. Once in a while, however, she found that the thread had already been broken, because of the hole which the butterfly had made through the end of the cocoon,



## THE FIRST DAYS OF KNOWLEDGE

when bursting its way out. Then she would have to find a loose end, before she could go on unwinding. Soon there was a soft, fluffy mass of the delicate thread in her lap, and while Silver Moon of course did not know it, the thread she had been unwinding was what we now call silk.

Now the Empress Si-Ling-Chi was sorry that she had punished her little daughter on account of the fan, so when the cool of the evening came she went down into the garden with her maids-in-waiting to see what Silver Moon was doing.

They found her sitting on the stone bench beneath the mulberry trees, industriously unwinding the silk worm's cocoon. When her mother, with a smile, asked her what she was about, Silver Moon held out the tiny handful of silk, and explained how she had come to find it.

The Empress Si-Ling-Chi, who was a very clever woman even if she did live nearly five thousand years ago, admired the delicate, silvery thread very much, and was surprised to find how strong it was.

Then Silver Moon, who was very fond of fairy stories, clapped her hands.

## SILVER MOON'S SILK DRESS

"It must be what the fairies make their dresses of," she said.

The Empress smiled and said perhaps it was, although as a matter of fact she did not believe in fairies at all.

"Let us go into the house, child," she said. "Your father will be waiting."

But Silver Moon still sat upon the bench, the bit of silk tightly clutched in her hand.

"I wish *I* could have a dress of it," she said.

Now Si-Ling-Chi was very fond of her daughter, and loved to indulge her whims. But this whim was too foolish to be taken seriously.

"If we had a thousand times as much," she said, looking at the tiny mass of silk in Silver Moon's hand, "it would not be enough to make you a dress, even if we could weave it. What you ask is impossible."

"I thought the Empress of China could do anything," Silver Moon pouted. "And besides, there are plenty more of those queer things in the trees. Look!" She pulled aside the branches. "There are hundreds of them up there. Don't you see?"

## THE FIRST DAYS OF KNOWLEDGE

The Empress, looking up, saw many more of the little cocoons fastened here and there to the mulberry branches. So she told Silver Moon that she would see what she could do.

The next day she sent servants with baskets to pick the fuzzy little cocoons from all the mulberry trees in the palace garden, and from all the other gardens round about. She ordered them to bring back as many as they could, so that by nightfall they placed before her a hundred baskets.

Then the Empress sent for Sun Yat, her head weaver, and showing him the cocoons, told him what she wanted.

"Unwind the thread from them," she said, "and spin it, and weave it into cloth with which to make a dress for Silver Moon's birthday."

Sun Yat picked up one of the cocoons and holding it in his hand tried to unwind the delicate thread, but it broke in his fingers.

"It is fine as a cobweb, August and All-Powerful One," he said. "Where shall I find spinners to spin it, or a loom on which to weave it?"

"Begone, son of a pig!" said Si-Ling-Chi an-

## SILVER MOON'S SILK DRESS

grily. "Those are questions to ask yourself, not me."

So Sun Yat went away, shaking his head, but because the word of the Empress was law, there was nothing for him to do but obey. So he had the hundred baskets full of cocoons carried to his shop.

Sun Yat was very much worried. All the weaving he had done up to now had been with heavy, coarse threads of wool, or cotton, that white, fluffy mass of fibres, thin yet strong, which grows in pods or bolls upon the cotton plant. But he had never tried to spin or weave threads of such delicate stuff as silk.

For a week he laboured in his shop, soaking the cocoons in warm water to soften them, showing his assistants how to unwind the fragile thread from the cocoons without breaking it, winding it on ivory spools or bobbins. A score of nimble-fingered young girls worked day and night, and at last all the cocoons were unwound.

Then Sun Yat called to him his chief spinner and told him what he wanted.

## THE FIRST DAYS OF KNOWLEDGE

"Take these bobbins of cobweb," he said, "and spin me a good strong thread."

The chief spinner unwound some of the silk, and it broke in his hand.

"How can a man spin a thread of cobweb, Honourable Master?" he asked.

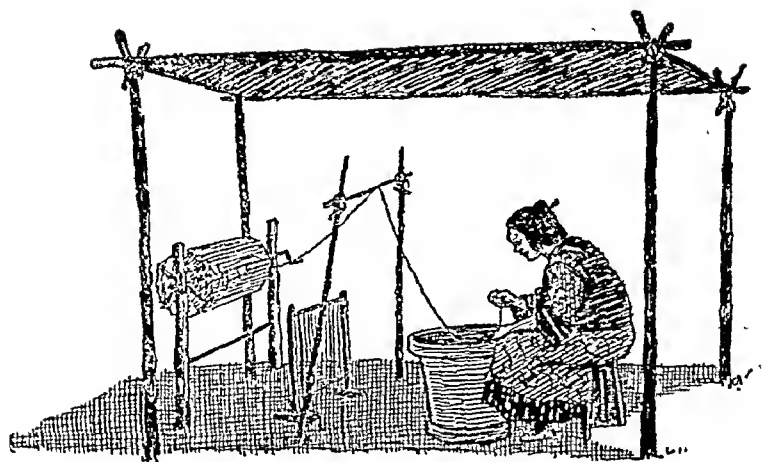
"Begone, son of a lame duck," roared Sun Yat, remembering what the Empress had said to him. "Those are questions to ask yourself, not me." And because the word of his master Sun Yat was law, the head spinner said no more, although he shook his head.

Now the head spinner had a daughter named Lotus Bud, whose fingers were as delicate as the petals of a rose, and when she saw how troubled her father was, she asked him what was the matter.

"Can you spin a thread of cobwebs?" her father asked.

"I can try," said Lotus Bud, taking one of the bobbins.

All that day she worked and worked, spinning the fragile silk into a strong thread, and when night came she took the bobbin to her father and



LOTUS BUD WORKED ALL DAY, SPINNING THE FRAGILE SILK  
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## SILVER MOON'S SILK DRESS

showed it to him. The head spinner was delighted.

"Show the clumsy-fingered girls in my shop how to do it," he said, "for there are a hundred bobbins to be spun."

So Lotus Bud showed the other girls how to spin the silk without breaking it, and when the end of the week had come he carried the yarns of silk back to Sun Yat.

The head weaver was very much pleased, so he called to him his best dyers and told them to dye the silk a silvery blue. Then he went to work to make a loom.

He made it of polished ebony wood, very different from the heavy looms he used when weaving wool. And his shuttle was of ivory, smooth as the skin of a child. For he desired above all things to carry out the commands of the Empress Si-Ling-Chi, whose word was law.

So when the thread the head spinner had brought had been washed, and dyed a silvery blue, and dried in the sun and the wind, Sun Yat sat down at his ebony loom and began to weave.

For years and years he had been the head

## THE FIRST DAYS OF KNOWLEDGE

weaver of the palace, and his fingers were as deft as a young girl's. Beneath his hands the ivory shuttle, carrying the delicate thread, shot back and forth across the warp, flashing in the sunshine, and slowly there grew upon the roller of the loom a gossamer fabric, delicate as moonbeams upon the still waters of a pond, and soft to the touch as the south wind. No man had ever before seen so shining and beautiful a fabric, and Sun Yat marvelled at its loveliness.

When the roll of silk was done, Sun Yat carried it to the palace and, kneeling before the Empress, spread it out for her to look at. And the Empress, too, was in raptures over its beauty.

"You have done well, Sun Yat," she said, "and I shall reward you and your spinners and your dyers, and the girl called Lotus Bud, with many pieces of gold." For Sun Yat had told her about the head spinner's daughter. Then Si-Ling-Chi sent for the Emperor, Huang-ti, and explained what she had done.

As soon as Huang-ti saw the roll of silk, he, too, was delighted with it. Being a great and wise emperor, he understood the value of the new



## SILVER MOON'S SILK DRESS

discovery, and gave orders that henceforth the silk-worms all over his kingdom should be cared for, and their cocoons gathered in season for the making of silk. As for Silver Moon, she went to her birthday party wearing the first silk dress that had ever been made in the world, and looking like a fairy princess.

The new material soon became very popular. Everybody wanted to wear clothes made out of the soft, shining fabric, and the subjects of Si-Ling-Chi were so grateful to her for what she had done that they called her the Goddess of the Silk-worms, and in China even to this day, when the season for the hatching of the silk-worm eggs comes around, they hold a great feast in her honour.

Before long, instead of letting the silk-worms live and spin their cocoons in trees, the Chinese began to raise them in buildings put up for that purpose, gathering the mulberry leaves for the little worms to feed on. And when they saw that the moth, in forcing his way out of the cocoon, broke the long thread he had wound about himself, in many places, they found out how to stop

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this by putting the cocoons, just before the moths were ready to leave them, in a bath of steam. This killed the poor moths, of course, but without it the silken thread when unwound from the cocoon, instead of being in a single piece, sometimes over half a mile long, would be broken into many shorter pieces by the bursting open of the cocoon by the moth.

For a long time the Chinese kept the secret of making silk, by declaring it a crime for any one to send or take the eggs of the worm out of the country, but after a while the secret spread, just as Tubal's secret of making bronze spread, to other peoples, and now the silk-worm is raised in many warm countries besides China, such as Japan, Italy, Spain, Asia Minor and Greece. But in England and the United States the worm has never been successfully raised.

They tell an interesting story of how the silk-worm eggs were finally brought out of China to Constantinople. This city, which is in Asia Minor, was built, as no doubt you know, by the Emperor Constantine, and was the capital of the Eastern Roman Empire. It is said that the

## SILVER MOON'S SILK DRESS

Roman emperor Justinian, finding that, on account of his war with Persia, the exports of silk from China through that country were cut off, sent two monks as pilgrims to China, to learn the secret of making silk. These two monks not only found out how to raise and care for the worms, but also brought back a quantity of the tiny eggs, hidden in their hollow pilgrim's staffs.

Whether this story is true or not, we know that not many hundreds of years after the birth of Christ the use of silk had spread all over the known world.

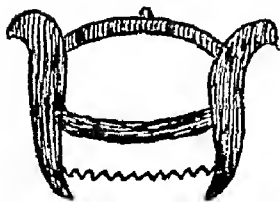
So when you put on a silk dress, or a pair of silk stockings to-day, you have to thank the keen eyes of little Silver Moon, and the keen brain of the Empress Si-Ling-Chi, and the skill of Sun Yat, the weaver, and the little hands of Lotus Bud, the daughter of his chief spinner.

## CHAPTER VIII

### THE OX-CART

WHEN the first people began to travel about from place to place, they of course walked. There was no other way for them to go, unless they came to water, in which case they might journey down great rivers on rafts, making use of the current to sweep them along, or cross lakes in canoes, driven by paddles, or voyage on larger bodies of water in boats, driven by oars, or even sails. But for a long time the only way people could get about on land was to walk.

Now this was all very well, so long as they had little or nothing but their weapons, their spears and bows and arrows to carry with them, but when the tribes began to settle down and collect property, that is, such things as pottery, and rugs, and rude bits of furniture for their houses, it was not so easy to carry these things on their backs, along with food to eat by the way,



THE FIRST SAWMILL

Saws used by the early workers in wood.

## THE OX-CART

especially if they took the old men and women, and the young children with them.

When whole tribes moved, seeking new homes, there were a great many things to take along—the animals, such as sheep, and goats and cattle could, of course, be driven on their own legs, but the old folks and the children were not strong enough to walk, especially over rough country, through thick forests and rocky mountain passes and sandy deserts, where there were no roads whatever, and the going was hard. So as the races of men began to spread further and further out over the face of the earth, it became more and more necessary for them to find some way to carry their things, as well as the people who were not able to walk.

In these days of railroad trains, and automobiles, and trucks, getting about seems a very simple matter, but in those far-off times it was anything else. The only things the people had to help them were the animals they had trained and raised, such as horses or oxen.

Now owing to the fact that different tribes lived in different ways, they slowly began to

## THE FIRST DAYS OF KNOWLEDGE

raise different sorts of domestic animals, and because of this, two ways of moving from place to place came into use.

One sort of people, as we have seen, were the wandering shepherds and nomads. These people were dwellers in tents, like the tribe of Nadji the rug weaver, and their property at first consisted mainly of goats and sheep, which did not have to be carried, because it could carry itself.

But in order to find good grazing ground for their flocks all the year round, these nomads were constantly moving about. Some of them, who lived on the great plains in what is now South Russia, soon found that they could find better pasture for their flocks in winter by wandering far to the south, just as birds to-day move south when the cold weather comes, to find better feeding grounds. And when the summer came, these dwellers in tents would drive their flocks north again, to feed on the fresh spring grass.

They did not have much to carry with them, beside their weapons, their rugs and tents, but even these made a heavy load to carry very far, so these nomad people learned how to tame and

## THE OX-CART

make use of horses. Moving about as they did, they built no cities. Having their flocks with them, they did not have to worry about food. All they had to do was to kill a goat, or a sheep, and cook and eat it. They ate wild fruits, but raised no grain. When they had need of it, they bartered with other tribes.

Mounted on their strong, shaggy ponies they could travel long distances, even thousands of miles, north and south, driving their flocks ahead of them, never staying very long in any one place, and soon became wonderful horsemen, just as their descendants on the great Russian plains are to-day. Even the little children could ride like the wind, and as these wanderers were quite as much at home on horseback as on foot, they had no need for wagons or vehicles of any sort with wheels, and did not give such things a thought.

But while these tribes of horsemen were developing in one direction, men of a different sort, living in a different way, were developing in quite another. Their homes were in the forest and lake and mountain country of Europe.

Here there were no wide grazing plains such



## THE FIRST DAYS OF KNOWLEDGE

as the nomads had found, and so the life of the people in these places was entirely different.

They first lived in caves, and after that, in little villages of huts built of logs, with clay plastered between the logs to fill up the cracks and keep out the cold wind. The great fireplaces in these huts were made of stone, and the roofs of thatch, or sods, held in place by flat stones.

Some of these villages were built out over the water, on stakes or piles driven into the mud, like stilts, and remains of them have been found at the bottom of lakes in Switzerland. The people in these houses were safe from attack, for they could be reached only over narrow wooden bridges leading from the shore, and in time of danger it was an easy matter to tear these bridges down.

Most of the people, however, lived in and about the great forests. And just as it was natural for people who wandered about like the nomads to raise horses, so these forest people, who moved about very little, came to raise cows, and pigs, and oxen, slow-moving beasts on which it was not easy for any one to ride.



A LAKE-DWELLER'S HOME

## THE OX-CART

Instead of depending on flocks of sheep and goats for food, they hunted and killed deer, and bears, and wild pigs, and fowl. They also killed and ate the animals they raised, pigs, goats, oxen, and used the milk of the cows and the cheese they made from it for food. They had gardens, too, in which they grew a little grain and certain vegetables, the roots of which were good to eat. And of course, living in this way, not wandering about much, these tribes began to collect all sorts of things, tools and implements for their houses and their farms.

When a tribe of this sort decided to move, as such tribes often did, either because there were too many people in one place, or because they wanted to find homes in warmer and more pleasant countries, the problem became a serious one indeed. Some way of carrying their household goods, their old folks, their children, along with them had to be found, and so the result was the invention of the wheel.

Who first discovered and made use of the wagon wheel we of course do not know, but the man who did gave to the world one of its most

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useful and valuable inventions. Some early thinker, working alone in the forest, may have seen that the round section of log he had just sawed from the trunk of a tree could be rolled along over the ground without much effort, while to push it or pull it endways took the strength of several men, and this may have given him the idea of the wheel. Possibly, in bringing such a log into the village an ox, or a pair of oxen might have been used, and since the log had to be left free to turn, and not drag, round pegs would have to be driven into the ends of it, or left there when it was cut, to which loops of rope for traces, or wooden shafts with a fork at the end of them, could be attached. A short round log of this sort, pulled along by an ox by means of traces or shafts was probably the first wheeled vehicle ever made. The next step, of course, would be to cut away the log between its two ends, leaving a rough, heavy axle in the middle, with a solid round wheel at each end. But this would have the great fault that the axle would turn around along with the wheels, making it a hard matter to build a wagon body on it. So nat-

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urally the next thing some early thinker did was to saw from the end of a log two round, solid discs or wheels, bore or burn a hole through the middle of each of them, and then stick the two ends of the axle through these holes, with a pin through each end to keep the wheels from coming off. Now the wheels could turn while the axle did not, and so it was an easy matter to build on this axle a square body out of boards and thus make a wagon or cart in which things and people could be carried. It must have been a hard task to cut such wheels from a log with flint tools, axes, and saws, but somehow these early people did it, and built the first wheeled wagon or cart. Later on, wheels were made of heavy solid rims, with spokes in them, as they are made to-day, and chariots with wheels of this sort have been found in ancient Egyptian tombs, thousands of years old.

It must have taken a long time to build one of these ox-carts, in those days, but luckily the people were not in a hurry, as we are to-day, and a week or two one way or the other made little or no difference to them. When they came to move,

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they hitched their oxen to these carts, piled their baskets and jars, their tools and implements, their food and women and children into them, and set out to find a new home. It must have been very rough riding, with no springs to their wagons, and no roads, so that we can imagine the old people and the children were pretty well shaken up.

It was in ox-carts like this that the light-haired, ruddy-cheeked people we now know as the ancient Greeks travelled hundreds and hundreds of miles from their forest homes in central Europe southward to the shores of the Mediterranean Sea. And here, more than a thousand years before the time of Christ they found the dark-haired, brown-skinned people of the purple-sailed ships, who lived on the Wonderful Isle and around the shores of the inland sea, and fought with them. And because these men from the north were fierce and rough and powerful they drove the dark-skinned people from their homes in Greece and took the land for themselves. They were the forefathers of the Greeks we read of in history, and they started a new and wonderful civilisation in their

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new home, learning about bronze and many other things from the people they had conquered.

It may have been to some thinker in the northern forests that we owe the invention of the wagon wheel. To-day there is scarcely a vehicle, or a ship, or a piece of machinery of any kind in the world in which wheels of some sort are not used.

But while the forest peoples were making use of the wheel for wagons, people in other parts of the world, as we shall see, were using wheels for very different purposes.

## CHAPTER IX

### THE VALLEY OF CLAY

THE tribe of Erech lived in the land of the clay huts, through which Tubal and his brother had passed on their way from the mountains to the sea.

They had wandered into this country from other lands, probably from the east and north, although of this we cannot be sure, and settled in the valley of the two great rivers, the Tigris and the Euphrates, which we now call Mesopotamia, from a Greek word meaning amid or between the rivers. But at the point where they made their home the two rivers, flowing together, had become one, emptying into the Persian Gulf, far to the north of where the head of that gulf is to-day.

The people of Tubal, as we have seen, being a shepherd tribe, lived in tents. And the people of the forests, who did not move about so much,



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lived in huts built of wood, because there was plenty of wood all about them, easy to get. And the people of the Wonderful Isle built their homes of stone, because they had more of that than anything else.

But in the land to which Erech and his people had come neither wood nor stone were so plentiful. It was not a country of great forests, but one of marshes, and reeds, and clay. So it was natural for them to build their houses of clay, at first mere huts of reeds with the clay plastered over them, and, later, houses of sun-dried bricks.

This country of the people of Erech was one of the very first in which men began to gather and live together in villages and towns, and they came there and began their civilisation even before the days of the Wonderful Isle of which we have read. They lived in villages and towns because of the nature of the country to which they had come.

This country was not so well suited for grazing, for feeding flocks and herds, as were the grassy plains of the nomads. And wild animals,

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for food, were not plentiful, as they were in the great forests of Europe. But one thing this land was particularly good for, and that was farming. So, in order to get food for themselves, the people of Erech became farmers.

As we have said, they found before long that they could shape the smooth fine clay in the valley into bricks, to build their houses with. But they did not burn these bricks in the fire, as we do to-day, but merely dried them in the sun. There is very little rain in that country, and for that reason sun-dried bricks were almost as good as burnt ones.

Now I am afraid that you may ask how a country in which there is so little rain could possibly be a good place in which to grow things, and that would be a very reasonable objection, but although there was not much water in that country in the shape of rain, there was plenty of it in the two great rivers, and Erech and his people soon found out how to make use of it.

At first, when the tribe was small, the people built their homes along the river banks, and while some of them fished to get food, others with

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sharp sticks and hoes dug up the ground and planted seeds, so as to grow grain, from which to make bread, and fruits, and vegetables. The marshy ground along the banks of the rivers was wet whether it rained or not, and so their gardens grew. Far off in the mountains to the north, melting snow kept the rivers full of water.

After a long time, however, as the number of people to be fed grew larger and larger, there was not room for all their gardens on the banks of the river, and they spread further and further inland. Now, when it did not rain, and the people saw that their gardens were in danger of drying up, they were forced to go in long lines down to the river carrying pottery jars on their shoulders or heads, and bring back in these jars water to pour on their gardens.

The further they got from the river the harder it became to carry enough water to keep their gardens growing. And without plenty of water, things will not grow. So here was a problem for a thinker, and it was Sumer, one of the descendants of Erech, who solved it. He solved it for all time, by means of a simple invention which

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was at the same time a very great one. It is used all over the world to-day wherever men are forced to grow things in countries without rain, and this way of doing it which Sumer discovered we now call irrigation.

If we think of the farm on which Sumer and his family lived as being a long distance away from the river, we can easily see that it would be a very hard matter to carry enough water in jars to keep his gardens fresh and green. Often when Sumer was toiling along through the burning sun he would become angry because his farm was not nearer the river, so that he would not have to carry his water so far.

One day when the melting snows in the mountains had filled the river to overflowing, Sumer saw a tiny rivulet trickle over the banks of the surging stream and run down into the garden of one of his neighbours, whose place was close to the water. And this gave Sumer an idea. If the water from the river would run into his neighbour's garden, why could it not be made to flow into his own?

The next day he went to work with his stone.

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hoe, digging a ditch from the river back to his garden. It was quite a long distance, and it took him many days before the ditch was done, but he kept on in spite of the laughter of his friends, who thought he was crazy, to try to make the river run anywhere but where it had always run in the past. As you grow older you will see that people are usually like that, ready to laugh at and make fun of the man with a new idea, just as they laughed at the man who invented the telephone, and the steamship, and the airplane.

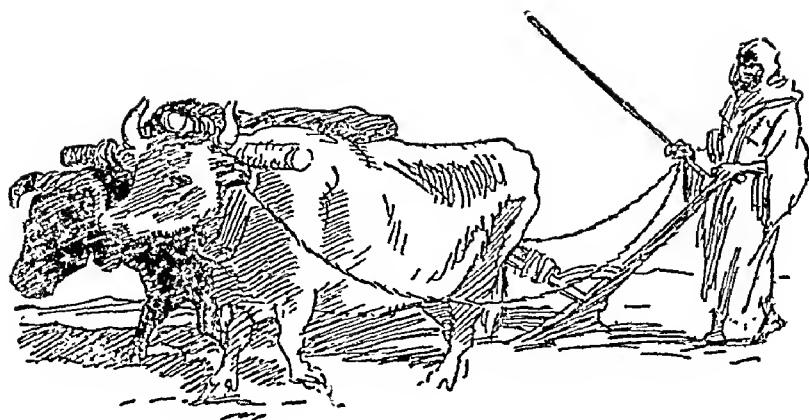
Sumer dug his little ditch from the river to his garden, and when all was ready he tore down the last few bits of earth and watched the water flow in a steady stream toward his farm. Here he had dug smaller ditches, so as to carry the water to the growing plants, and when his neighbours saw what he had done, they stopped laughing and began to dig ditches too. Before long the gardens of the men of Sumer and Erech were bearing the richest crops in the world, because of irrigation.

Even when the dry season came, and the water in the rivers fell so low that it would not overflow, it was easier to dip water from the river

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and pour it into the ditches than it had been to carry it on their shoulders. So all along the river banks people toiled, lifting up the water from the bed of the stream to the banks, first by means of jars held in their hands, and later, with buckets swung from one end of a sweep or pole. These poles were held in place across the top of an upright post, just as well sweeps are made to-day, and the opposite end from the bucket was weighted with a heavy stone. The man who worked the sweep filled the bucket with water and then raised it by bearing down on the weighted end, at the same time swinging the pole around so as to bring the bucket up to the bank. Here another man would empty it into the ditch, or, if the bank was too high, into a little pool, from which it was again dipped up, with another sweep, to the top of the bank. This method of raising water is very old, and yet it is still in use in another great country to the west of the land of Sumer, Egypt, where there is also little rain, but a great river, the Nile, fed by melting snows in the mountains.

After a great many years the whole country



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between the rivers was covered with irrigation ditches, not little streams, such as the one Sumer had built, but deep and wide canals, their sides lined with stone. The fields and gardens produced such wonderful crops that the people of the clay country grew rich and powerful, building towns that later on became great cities, such as Nippur, and Babylon, made of clay bricks, and they finally invented a written language, which we are able to read to-day because instead of writing on things that would not last, such as wood, or the skins of animals, or papyrus, a sort of paper made out of the bark of reeds, they wrote their books, their records, and even their letters on tablets of clay, which they afterwards burned in the fire, as they burned their pottery bowls and jars, so that these tablets, with their messages written on them, are as clear and easily read to-day as they were when they were written, thousands of years ago.

This civilisation in the clay country between the rivers was one of the first we know anything about, and we owe our knowledge of it entirely to the clay tablets the people left behind, them.



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It is thought by scientists that the tribes of Erech came into the valley of the two rivers over six thousand years before Christ, or eight thousand years ago, counting from to-day.

## CHAPTER X

### MAKING THE SUN WORK FOR US

IF you have read "The First Days of Man," you will remember that when the Sun saw the hairy cave people learning so slowly to make their first bows and arrows, their stone-pointed spears, he rather laughed at them and their puny efforts. And Mother Nature, who was watching very carefully over the creatures God had placed in her charge, told the Sun that some day these Earth People would make even *him* work for them. The Sun did not believe such a thing possible, but Mother Nature was right, just the same, as you will soon see.

We have told about the ox-cart, and how the forest people made use of wheels in building their first wagons and carts. In other parts of the earth men were also building wheels, but they were of a very different sort, and were used for a different purpose.

It may have been one of the men of the clay

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country, or of that wonderful land along the Nile, or some thinker in far-off China, but somewhere, we do not know where, some man used his brain to make things easier for himself and for the people about him by inventing the water wheel.

If you had lived in those far-off days, and your father had told you to go down to the bank of the river every morning, and dip out water until dark by means of a bucket tied to the end of a swinging pole, you would not have liked it at all, I am sure, and before the long hot day was done you would probably have been very tired of it.

Now, if you had been a dull and stupid plodder, as most people were in those days, you would have grumbled and fussed, of course, but you would have gone on dipping up water just the same, day after day, without trying to think of a way to make your task easier.

But if you had been a thinker, and used your brains, you might have thought of two ways to get your work done for you. And both of these ways would have required the use of a wheel.

In the first place, you might have said to your-

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self, "It would certainly be much nicer if I could find a way to have that strong, lazy ox out there in the field do all this hard work for me." And after thinking that, you might have made a framework or wheel out of bamboo, with buckets hanging all around the rim of it, and set it up between two posts driven into the bed of the river, and then, by means of a notched or gear wheel on shore you could have had the ox turn the wheel in the water and bring up a full bucket for you on the end of every spoke. This would have been much easier for you, since all you would have had to do then would have been to sit on the bank and empty the buckets as they came up, into a wooden gutter or trough leading to your ditch. But it would have required an ox to turn the wheel, as well as somebody to drive the ox, and you might not have had any ox.

Or you might have thought about the matter in another and quite a different way. Suppose you had noticed that every time you dipped the bucket at the end of your pole in the stream, the swift current swept it along and sometimes almost pulled the other end of the pole out of

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your hands. You might have said to yourself, "The current of the river is stronger than I am. Why can I not make it work for me?"

This thing the river current used to sweep your bucket along is called Power, and it is by making use of Power that Man is able to do all the wonderful things he does to-day. And the power in the river current really came from the sun, because the heat of the sun had turned the moisture of the sea, of rivers and lakes, of the land, into vapour, which, being lighter than air, had floated upward and formed clouds. And the snow from these clouds had fallen on the mountain tops. When the heat of the sun melted it again, it rushed down the mountain sides and into the valleys with terrible force, strong enough to sweep aside huge rocks and boulders. These rushing waters hold power in every drop, and Man, in making use of this power, is really making the sun work for him. At Niagara Falls, and thousands of other places all over the world, the power of falling water is being used to turn wheels, driving mills and factories, or huge dynamos which make electricity, so that we can truly say

## MAKING THE SUN WORK FOR US

that the sun is running our trolley cars, and lighting our houses, and grinding our wheat and corn.

Now if you had been a bright boy on the banks of the Tigris, in Mesopotamia, or the Nile, in Egypt, or the Hoang Ho, in China, or the Ganges, in India, you might have thought about that power in the strong river current, and said to yourself, "If it is strong enough to sweep this pole out of my hands, why is it not strong enough to lift up this water?" Perhaps you might have been sure that the river was able to do your work for you, but you could not at first see how to make it do it. You might never have seen the way, but somebody did, and when you think of it, the way was simple enough.

All that was needed was a bamboo wheel, with double spokes set side by side, and joined with flat boards or paddles. Such a wheel, set up in the river, on two upright posts, just as the wheel was set for the ox to turn, would be made to revolve by the current of the river sweeping against its paddles. You have no doubt made such a water wheel yourself, and set it up in a little brook or stream. Now suppose around the

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outer edge of this wheel were hung little buckets, made, let us say, of short, hollow pieces of bamboo. The wheel, in turning, would dip the buckets into the water, fill them, and raise them on the other side until they were within reach of your hands. As in the case of the ox-driven wheel, you would have nothing to do but sit on the bank and tilt the little buckets into the trough at the top. That would certainly be very much easier than dipping up the water yourself, and there would be no need for an ox, or another man to drive him.

But that is not all. Presently you would have found a way to make the buckets tilt themselves into the trough, turning upside down when they reached the top, and then, so far as getting water from the river was concerned, you could go away and leave it. You would no longer have that stupid and tiresome labour to perform for the river would be doing it for you. And really the sun would be doing it for you.

After a while, too, you would find that the turning water wheel could do a great many more things for you than just raise water.

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For one thing, it could grind grain.

Suppose the people of your country had for hundreds of years been making grain into coarse flour by pounding it in a hollow rock with a smooth round stone. If you had been a young girl, in those far-off days, you might have been very weary of making flour in that way. It was slow and tiresome, and as the tribes got larger, and more and more flour was needed to feed them, quicker and better ways had to be discovered.

One of these ways was to take two round flat stones, called millstones, with holes in their centers, and place one on top of the other and turn it around. The grain, fed into the space between the two stones, was soon ground to flour, which ran out along little grooves cut in the stones.

The upper stone had a long handle or bar fastened to it, and was turned by a man, often a slave. He had to walk round and round in a circle all day, turning the heavy stone.

Later on, when the stones were made larger, an ox or a horse or a donkey was used in place



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of the slave. But oxen, and horses, and donkeys, and even slaves, have to be fed, which costs money, and so men looked for other ways of turning their millstones. And they soon found two.

One was to use the power of rivers and streams. If water wheels could be used to raise water, they could just as well be used to grind flour. The axle of the water wheel, on which it turned around, was made longer, and on the end of it was a wheel with notches, or cogs as they are called, cut in its edge. There were other notches, of the same size, on the top of the upper millstone, or in a ring of hard wood fastened to it. When the cogged wheel at the end of the axle turned, it also turned the millstone by catching in the notches around its rim, and so ground the corn.

The other way was just as simple. Men found out how to make wind wheels as well as water wheels, that is, they made wheels with sails on them, instead of wooden paddles, and when the wind blew it turned the wind-mill around, and so turned the millstones.

Both wind-mills and water wheels are very ancient inventions, and yet both are in use to-day.

## MAKING THE SUN WORK FOR US

In Holland, a large part of which is below the level of the sea, the water is kept out by great walls of earth and stone called dikes, and along these dikes are hundreds and thousands of wind-mills, driving pumps to pump out the water that leaks in, and thus keep the country from being flooded. You have no doubt often seen such mills yourself, pumping water from wells to houses in the country, where there are no city water pipes. And wind-mills for grinding grain are still in use in many countries where men have not learned to use electricity, or steam.

The same thing is true of water wheels. We have already spoken of the great power plants, such as the one at Niagara Falls, but there are small water wheels, used for grinding flour, in many places in the country, just as they were used thousands of years ago.

In the case of wind-mills, too, it is really the sun that is working for us. When the sun's rays heat up the air in one place, that heated air rises. And when it rises, other and cooler air rushes in to take its place, causing what we call wind.

But it is not through wind and water only that

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Man is able to make the sun work for him. He does it in many other ways. It is the heat of the sun that causes plants and trees to grow. Without this heat they could not live. If you chop down a tree, and burn the wood in a fire to keep you warm, you are getting back the same heat that the sun used in making the tree grow. Or if you burn the wood to make steam, and drive an engine with it, the stored-up heat from the sun is what makes the engine go. Even the great beds of coal were formed from ferns and trees grown by the heat of the sun, and so when you ride on a railroad train the power which drives the engine comes from energy stored up millions of years ago by the sun.

But you cannot make the sun or any of the other great forces of nature work for you unless you use your brains. Thousands of men are at work all over the world to-day, trying to find out new ways to make use of these great natural forces, and it is to the thinkers that we must look for the progress of the future.

## CHAPTER XI

### THE BATTERING RAM

SARGON, the great king, sat before his tent gazing down over the Valley of Clay. He was sullen and angry, because he and his fighting men wanted to take the fertile valley for themselves, and the people of Sumer had defied him.

The men of Sargon were called Akkadians, and they came from the west, between the country of the two rivers and the sea.

Instead of living peacefully in towns and villages, as the people of the clay country did, cultivating gardens, raising flocks, building canals, making pottery, weaving, and working in metals, the men of Sargon were raiders and fighters, spreading over the lands to the east and taking whatever they liked.

Travellers from afar, coming to Sargon, had told him of the men of Sumer who lived in towns, and stored up much wealth in grain, and cattle

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and silver and gold, so the king of the people of Akkad made up his mind to march into the country and conquer it.

The more you read of history, the more you will see that wars are usually started because the people of one country, under some great leader, have coveted the lands of another people, and tried to take these lands away from them. Not all wars, of course, but by far the larger part of them. Man has always been a fighter. He had to fight from the very beginning. Enemies surrounded him on all sides. Not only did he have to battle against wild beasts, against other and more savage tribes, but also against heat and cold and hunger and storm and ice and snow. And of course, in struggling with all these things he became stronger and better able to endure. From this some people argue that war, even to-day, is a good thing, because it makes men brave and strong.

This may have been true, as long as men fought face to face, with swords or spears in their hands. But it certainly is not true now, when wars are fought with poison gases, with airships dropping



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bombs, with submarines blowing up ships and drowning hundreds of men. In the olden times, fighting did make men strong, but now strength counts for nothing. The weakest and smallest man can use a rifle or throw a hand grenade just as well as a trained athlete. The wars of to-day are in the hands of engineers and chemists who never see a battle, but do their work in laboratories hundreds of miles away from the lines.

In Sargon's time, however, men fought with their hands. The warriors he led to battle carried long spears, swords, shields, bows and arrows, and slings. Their spears were tipped with copper or bronze, their shields covered with ox hide, or plated with brass, thick and strong, through which an arrow could not pierce, even when shot at close range.

They swept down into the clay country like a raging flood, thinking that they would have an easy time of it conquering the peaceful dwellers in the valley. War, to them, meant two armies, cutting and slashing at each other on the field of battle, until one or the other lost heart and throw-

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ing down their weapons ran away. This was the sort of fighting they were used to.

But they had not gone far into the clay country before they met something entirely different, something they had not fought against until now—a walled city. And this completely upset their plans for conquering the people of the river country.

Many towns had grown up, in the land of Sumer. Sometimes the people of these towns would quarrel with one another, and a little war would start between them. And sometimes fierce nomads from the country outside, from the deserts to the southwest, the mountains to the north, would sweep down on them and carry off their cattle, and their grain, and their women.

So in order to protect themselves, the people of the clay country, using the sun-dried bricks from their endless beds of clay, built walls about their towns, small ones at first, and later on high ramparts, which the raiding parties could neither scale nor batter down.

This was a new thing in warfare, and when Sargon and his men came before the first walled



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city they did not know what to do. They soon found that their swords and spears, and even their bows and arrows, were of little use to them. The people of the city, instead of lining up in the fields for a battle, went inside, closing the great wooden gates after them, and from the tops of their clay walls laughed at the attempts of the invaders to get at them.

Seeing this, Sargon, after a talk with his captains and head men, caused wooden ladders to be built, so that his warriors could climb to the tops of the walls. But the men of Sumer pushed the ladders away with long poles, or rolled heavy stones down on them, crushing them, or shot arrows at the Akkadians as they tried to climb up. A few, who managed to reach the top, they attacked and killed, so that at the end of the day the men of Sargon went back to their tents, defeated.

It was because of this defeat that Sargon sat before his tent, sullen and angry. For a week he and his leaders had been trying to find a way to get into the town, but they had failed.

Among the men of Sargon's army was a young

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man named Nebu. He was a worker in wood, making bows and arrows, handles for axes and spears, and many other things of this sort. Nebu was a master workman, with many under him, and it was he and his men who had built the ladders with which the army of Sargon had tried to scale the walls of the city.

Sargon sent for Nebu, and when the worker in wood came before him, the king cried out in an angry voice:

"Shall it be said that I, Sargon, King of the land of Akkad, am to be stopped by a wall of clay? Make me an engine wherewith to batter it down!"

So Nebu, hearing the commands of the king, went to his tent, about which were the tents of his workers. And in the space between the tents lay many logs, and pieces of timber, and poles, from which to make spear shafts, and arrows, and the framework of shields.

Nebu stood for a long time gazing at these things and thinking how he might do what Sargon the king had asked.

Not far from his tent there stood a wall of

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clay bricks which had once been part of a hut, but the men of Akkad, advancing toward the city, had broken down the hut so that only this wall remained standing.

Suddenly Nebu lifted from the ground a heavy log, and holding it in his arms, drove the end of it with all his strength against the wall of soft brick. Once, twice, three times, he struck, and at the third blow the unburned bricks, crumbling beneath the weight of the log, gave way, and the wall fell to the ground in a cloud of dust.

Nebu smiled, and threw the log to the ground. He had found out what he wished to know.

Calling his workmen to him he went out into the country until he found a tree, tall and round and thick, with no branches for a space many times the height of a man. This tree he commanded his workmen to cut down.

When the tree was cut, and the top of it sawed off, Nebu summoned more men, and together they dragged the mighty log to the camp.

Then with poles and heavy timbers Nebu and his workmen built two strong towers, three times the height of the tallest man, and under these

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towers, which were joined together at top and bottom, he caused rollers to be placed, so that they could be pushed along over the ground. All these timbers were held together with wooden pegs, and lashed with raw-hide. The fronts of the two towers he covered with the hides of freshly killed oxen, and between them he hung, by many strong raw-hide ropes, the great log he had cut in the forest. While the towers were being built he went to the workers in metal, some of whom had been to the Wonderful Isle and learned about bronze, and told them to make for him a bronze head or cap to fit over the end of the log so that the wood might not be splintered and broken when it struck against the wall. And because the ram is an animal which butts with his head, the workers in metal fashioned the bronze cap in the shape of the head of a ram. For what Nebu had made was a battering ram.

When the men of Sumer looked down from their walls and saw the strange engine with its brazen head rolling toward them they did not know what to make of it. So they shot arrows and cast stones against it, but the covering of ox-

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hide turned their missiles aside, and the men behind the towers, who were pushing it toward the walls, were not hurt.

Sargon sat in a gilded chair before his army and watched what Nebu and his men were doing. He did not believe they would be able to batter down the wall, but no one had thought of anything better.

Along each side of the great log many ropes had been attached. When the ram had been brought close against the wall, the men behind the towers took hold of these ropes and at the word of command from Nebu drew back the swinging log as far as it would go. Then, all together, they drove it forward against the wall.

The very first stroke shook the wall until it trembled, and the bronze head of the ram cut into the soft clay bricks, making a jagged hole.

At the second and third strokes the hole became deeper, and soon great cracks began to show in the face of the wall, spreading out from the hole the ram's head had made in every direction. At the fifteenth stroke the crest of the wall tumbled down in a cloud of dust and at the

## THE FIRST DAYS OF KNOWLEDGE

twentieth a space thirty feet wide fell in, and the army of Sargon sprang forward to the attack.

The people inside the city, seeing their wall broken down, fled in a panic. Some, on either side of the breach, continued to hurl javelins and stones down on the invaders, but Sargon's men, holding their shields above their heads, rushed over the shattered bricks in safety. Within an hour they were masters of the city.

Nebu's invention of the battering ram placed the walled cities of the clay country at Sargon's mercy, and before long he had taken them all, and made himself king of the land. He became a great ruler, conquering all who opposed him, and this he was able to do because of Nebu's invention.

The invention of the battering ram marked a great step forward in the art of war. Ever since the days when the first man sheltered himself from his enemies behind a rock or the trunk of a tree a fight has been going on between what are called methods of offence, and what are called methods of defence. When man discovered the sling, the bow and arrow, the boom-

## THE BATTERING RAM

crang, he was making use of weapons of offence. When he hid behind a rock, or made himself a shield, he was using weapons of defence. Armour, made of steel, was a weapon of defence until gunpowder, and bullets, made it useless. When the use of cannon made new methods of defence necessary, men built forts of stone, and when larger cannon battered these down, made forts of steel. In the same way, cannon on ships, deadly weapons of offence, found an answer in armoured ships. The *Merrimac*, with its plating of iron, had the wooden ships of the United States fleet at her mercy until the guns in the revolving turret of the *Monitor* drove her away. Even to-day the long fight between methods of defence and offence is going on. The use of poison gas, a weapon of offence, was answered by the gas mask—the airplane by the anti-aircraft gun, the trench with its tangle of-barbed wire by the tank.

But in Sargon's day the fight between weapons of offence and defence had just begun. The wall of unburned brick was overcome by the battering ram. Now men began to find out ways to keep

## THE FIRST DAYS OF KNOWLEDGE

the battering ram at a distance from their walls. To do this they had to invent a new weapon of defence, which was a weapon of offence as well. This weapon was the ballista, sometimes called the catapult.

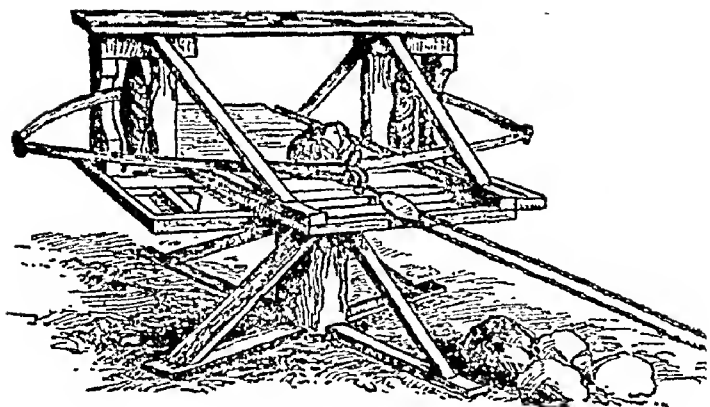
Some early thinker among the fighting peoples found out a way to hurl larger stones at his enemies than could be thrown by hand, and how to hurl them farther. Stones flung by slings were too small to do much damage against troops equipped with shields, and hand-flung stones of any size could not be thrown very far. What men desired was to find out a way to hurl heavy weights a long distance, just as cannon, later on, were used to shoot balls of iron or stone.

Among the forces that the early peoples soon learned to make use of was that stored up in a twisted cord or rope.

We all know that if we tie a double piece of rope between two upright posts or trees, and then put a stick between the two ropes and twist it around, end over end, the more we twist it the harder it will be to keep on twisting it.

Now suppose we let go of the stick. It will





CATAPULT USED FOR HURLING STONES

## THE BATTERING RAM

fly back in the opposite direction with great force.

So the man who found out a way to hurl heavy stones against his enemies made use of this force in a twisted rope, which force is called torsion.

He first made a framework of heavy timbers. Across the bottom were stretched two cords made of twisted raw-hide, as thick as a man's wrist. Between these two cords was placed one end of an arm or beam made of wood. At its other end was fastened a basket, or cup, in which the stone to be thrown was placed. A heavy beam of wood across the top of the machine stopped the arm when it flew up, but the stone in the pocket at the upper end of it went on for hundreds of feet, smashing everything in its way. At one side of the machine was a windlass, with spokes to it like the spokes of a wheel, and after the arm had been lowered, and fastened in place with a latch, and the stone placed in the pocket, a number of men would turn the windlass around by means of the spokes, twisting the raw-hide ropes until the arm was ready to fly up like lightning, the moment the latch which held it down was released.

This engine of war the Romans called the bal-

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lista. Some people call it the catapult, but catapults were originally huge bows, used for shooting great arrows and spears.

It is easy to see that the ballista, mounted on the walls of a city, could smash and destroy a battering ram with its heavy stones long before the ram could be rolled into place against the walls. So for a time these stone-throwing engines were weapons of defence.

But soon the attackers began to make use of them too, hurling stones so big that it took several men to lift them, and these great stones, smashing against the walls of a town, would batter these walls down just as the battering ram had done, so that the ballista became a weapon of offence, as well as one of defence.

In another way, too, it was used. Bombs were made, of clay jars or baskets, and filled with materials that would burn fiercely, such as oil or pitch mixed with sulphur, or a mixture of the same sort known as Greek fire, and these lighted bombs were hurled into towns, or against ships, to set them on fire.

Some nations, such as the Persians, used ele-

## THE BATTERING RAM

phants to attack their enemies, driving the huge beasts into the ranks of the opposing army and causing them to crush all who stood in their way. War chariots were also used as weapons of offence, sometimes with sharp knives like scythe blades fastened to their wheels. When the horse came into wide use, fighting men were mounted on them, forming what is known as cavalry, and such bodies of horsemen, riding with their lances against men on foot, made a terrible weapon of offence. But the foot soldiers found a way to defend themselves, by using very long spears, and forming in solid ranks three deep, with their shields interlocking. The front row would kneel, the second crouch over, the third stand erect, so that they presented to the enemy a solid mass of shields, bristling with long, pointed spears, and such a formation was very hard for cavalry to break.

So the struggle between offensive and defensive methods in warfare went on, from clubs and slings to spears and javelins and bows and arrows, to swords of bronze and steel, to shields and armour, to gunpowder, cannon, and ar-

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moured ships and forts, and finally to high explosives, poison gases, airships, submarines, and tanks.

Where the struggle will stop no one knows, but while some of the thinkers were using their brains to find new ways to kill people, others were at work on wiser and better tasks, trying to discover new ways to heal the sick, to secure food, to get about from place to place, to do the thousand and one things that go to make up the world's civilisation. And, as we shall see in the next chapter, one of the most important of these things was the art of writing.

## CHAPTER XII

### THE WRITING ON THE WALLS

FROM the very earliest times men knew how to speak to each other, even though at first they used only a few words, scarcely more than cries, or grunts. Even some of the animals can do that. As time went on, more and more words came into use, until finally a language was formed. But since each tribe or race, scattered in different parts of the world, used different sounds to mean certain things, their languages were different, too, which is why an Englishman cannot understand Chinese, without first learning what the words of that language mean, or an American understand Russian.

But while spoken languages were used for many thousands and even hundreds of thousands of years, it was a very long time before men found out how to set down the things they thought and said by means of written marks and signs.

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So far as we can tell, the first men to do this were the artists, with their rude pictures scratched on the rock walls of caves. If you had been a cave-dweller, and had cut on the surface of a flat piece of stone the figure of an ox, or a horse, another man, looking at it, and seeing it to be an ox, or a horse, would have had the same idea in his head that you had in yours. On seeing your picture of a horse, he would have thought of a horse himself, so that you had passed the idea on from your mind to his by means of a written mark or sign. That was the first writing, and of course it was picture writing.

For a long time men wrote down their ideas and thoughts in pictures, queer little figures that looked like or suggested the things they had in mind. For instance, if they wanted to write down a sign or word for the sun, they drew a circle with a dot in the centre of it, while for water they drew a little wavy line, and so forth. But these were pictures of *things*. With such pictures it was very hard to write down *ideas*. Anybody could draw a rude picture of a boat, which is a thing. But how would you go about

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making a picture of an idea, such as cold, or anger, or hunger, or thirst?

So the picture writing did not go ahead very fast at first, because no one had thought of making different signs or letters stand for different *sounds*. All speaking is just the making of different sounds. There are not very many of them. In our language we have an alphabet, and each letter in it has a sound, such as "A," or "F," or "T," and when we pronounce such a word as, say, cow, we put together the three letters that make that sound, "c" and "o" and "w," and write them down to mean cow, instead of drawing a picture of one. The advantage of this is that we can use these three letters in thousands of other words, having nothing to do with cows, while if we used the picture of a cow, it could be used for nothing else, and we would need a different picture for every word we wrote. In the same way, by means of our letters having sounds it is easy for us to write down the letters "song" to mean song, but it would be rather a hard matter to draw a picture of one.

So you can easily see that the best sort of writ-



## THE FIRST DAYS OF KNOWLEDGE

ten language is one which is based on an alphabet of letters having different sounds. But it took Man a great many thousands of years to find out the secret of the alphabet, and how to make use of it.

At first the pictures, and the picture writing which men carved on the walls of their caves and houses and temples and tombs were only pictures of things. But after a time some of the early peoples, such as the Egyptians, found that their word pictures might be used to mean several different things, and even ideas. For instance, suppose they had drawn the picture of a ring, such as the early peoples wore on their arms or fingers. That would have been the picture of a thing. But suppose they had had in their spoken language another word pronounced ring, as we have in English, meaning to ring a bell. Then they could have drawn a little bell inside the ring, and used the sign to represent the ringing of a bell, which is not a thing, but an abstract idea. In this way the little pictures came to have a phonetic, or *sound* meaning, as well as a *thing* meaning. After a while a great many of the pic-

## THE WRITING ON THE WALLS

tures came to have a sound as well as a thing meaning, but they were not the sounds of letters, as in our alphabet, but of *whole words*. And since there are thousands and thousands of words in even a simple language, there had to be thousands and thousands of pictures, too—not quite so many pictures as there were words, since some of the pictures, as we have seen above, might be used for more than one word, by changing it a little, but still so many that it would take years and years to learn them all. So, as most people did not have time to learn them, only a very few, the scribes and priests, knew how to write, or to read what had been written. The Chinese use a system of picture writing even to-day, and school-children in that country are obliged to spend years learning the thousands of word-characters in their language, in order to be able to read and write. I am sure you would not like to go to school in China.

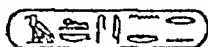
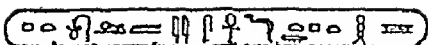
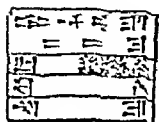
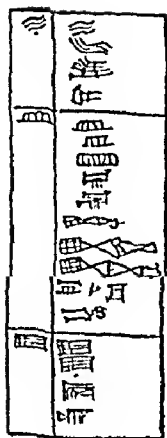
But the people of the great country between the rivers, whose walled cities were conquered by Sargon, also began to make and use a written language, different from that used by the Egyp-

## THE FIRST DAYS OF KNOWLEDGE

tians, and the fine clay they found everywhere about them helped them to do it.

They, too, first began to write by making pictures of things, but they did not cut or scratch these pictures on stone, or paint them on papyrus, as the Egyptians did. Instead, they used flat pieces, or tablets, of clay.

Now if you have ever tried to draw anything with a sharp-pointed stick on soft clay, you will know that it is very difficult to make curved lines, or indeed drawings of any sort, because the scratched-up clay gathers in a lump before the point of your stick, and also along the edges of the lines you draw, making them rough and ragged. For this reason the people of the country of Sumer, whom we call Sumerians, found it very much easier to press marks into their clay tablets with sharp, wedge-shaped tools, instead of trying to draw them, and so the pictures of things made in this way soon lost their original shape, and did not look at all like the things they were meant for in the first place. For instance, instead of drawing a circle on his clay tablet to represent, let us say, the sun, the man of the





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country of Sumer would have pressed four little dents in the clay surface with his wedge-shaped tool, making a rough sort of a square, and not a circle at all.

But this really made very little difference, because by this time the marks on the clay were beginning to stand, not for pictures of things, but for sounds. And not for the sounds of whole words, but of syllables. This was a very great improvement over the word-picture method. Thus, if in Chinese the picture of a boat could also be used to mean a number of other things having the same sound, they were all still *words*. But the people of the clay country made figures for the sounds of the different syllables in their words, out of their original pictures. We can see how this would work, in English, by trying it. Take, for instance, the word "carpenter." Suppose we had one little figure for the sound "car," an oblong, let us say, made of four wedge-shaped dashes, which might originally have been a rough picture of a wagon or car. And suppose we had another figure for the sound "pen," which might have been, originally, a drawing of a quill pen,

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but which was now just a single wedge-shaped mark. And a third figure for the sound "ter," two wedge-shaped marks, say, with a third across them, the original meaning of which had long ago been forgotten. Then we, using the Sumerian system, could write the word carpenter like this, . And, if we wanted to write another word, such as "carter," we could use the first and last syllables, leaving out the middle one, like this, .

As you will see at once, the same syllable-sounds could in this way be used over and over in hundreds of different words, which was far better and simpler than the method of having a picture for each word. But still it was not nearly as simple as having an alphabet with a letter for each sound. And because even this way of syllable writing was too slow and clumsy for everyday use, a great trading people living on the shores of the Mediterranean Sea finally worked out a written language with a single letter, instead of a syllable, for each sound. These people were the Phœnicians, the traders of the many-oared ships. Being a very busy people, they had

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no time to waste on picture writing. That was all well enough for priests to use, in carving the walls of their temples, but it would not do for business, for it took too long to learn, and they wanted something quicker and easier, just as shorthand is used in business offices to-day. So they took a number of signs from other languages, some from the hieroglyphics of the Egyptians, some from the wedge-shaped marks and characters used by the people of the clay country, some from the language of the men of the Wonderful Isle of Crete, giving each of these signs, or letters, a sound, just as we do now. Many of these letters had started out as pictures of things, but their original meanings had long ago been forgotten, and now they became merely letters in an alphabet.

The Greeks, who, as we have seen, came down in their ox-carts from the north and settled in the Mediterranean country, took these letters from the Phoenicians, with whom they traded and fought, changed them a little, and used them for writing down their own language. Later on, the Romans took their alphabet from the Greeks,

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whom they conquered, and this Roman alphabet, changed a little, is the one we use to-day.

Some of the letters, such as "O" and "T," are just the same now as they were in the alphabets of the Greeks and the Phœnicians. It is very interesting to think that we are using to-day letters that were in every-day use thousands of years ago, some of them just simplified forms of picture letters used on the walls of temples and palaces of ancient kings, or on the clay tablets of the people of the land of Sumer.

There are a great many things about the art of writing which we cannot tell here. It would take many books, to tell all there is to be said on the subject. But, as we have seen in the chapter on the Thinkers, it was not until men found out how to write that their history and their discoveries could be set down and preserved for the benefit of those who came after them. It is because we have learned how to read the picture writings of the ancient Egyptians, and the clay tablets of the Sumerians, as well as the languages of other dead and forgotten peoples that we are able to know to-day how these peoples lived, who



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their kings and emperors were, what they wrote and said to each other, and thought about and did thousands of years before Christ. It was in the alphabet of the Phœnicians, improved by the Greeks, that the immortal poems of Hómer were written, telling us of Helen, and of Achilles, and the siege of Troy, and of the adventures of the wandering Ulysses. What a priceless treasure we of to-day would have missed had the ancient Greeks not known how to write.

## CHAPTER XIII

### THE HEALERS

As we have already seen, while some of the thinkers were spending their time trying to find out new ways to kill people, others were learning how to heal them, when they were wounded, or cure them when they were sick.

From the earliest times there were to be found in every tribe certain men and women to whom the people went when they were ill or hurt. These men and women were usually very old; sometimes they were witch doctors, medicine men, priests, who not only gave medicines to those who were sick, but also ordered sacrifices to be made, and did all sorts of queer things, such as beating on drums, ringing bells, burning incense and the like, to scare out of their patients the evil spirits which they thought had entered their bodies and made them ill. And some of the medicines they used were horrible messes

## THE HEALERS

made of dried and powdered toads, and the poison from serpents, and the hearts and other entrails of birds and animals. No doubt a great many sick people, in the early days, died from the medicines that were given them.

But although these ancient doctors used terrible medicines at times, and were as likely in many cases to kill their patients as to cure them, they did, after trying the juices from roots, and herbs, and flowers, growing all about them, find out certain drugs and medicines that were good for people, and helped to cure them. Some of these simple drugs are still in use. When you take a dose of castor oil, or quinine, you must not think that these things are something new. The early peoples had found out about many such simple drugs, and used them to heal the sick.

As men became more civilised, however, they began to depend less and less on the beating of drums and the burning of sacrifices to cure their patients, and more and more on common sense. As far back as the days of Hammurabi, a king who ruled in the clay country after the time of Sargon, laws were made about the practice of

## THE FIRST DAYS OF KNOWLEDGE

surgery, and we find that if a doctor operated on a man who had a severe wound, using a bronze instrument, and caused the man's death, or opened an abscess in a man's eye, and the man lost his sight, the doctor was punished by having his hands cut off. So we see that even in ancient Babylon, more than two thousand years before Christ, surgeons had to be careful in their operations, and keep their instruments bright and clean, just as they do to-day.

Even before the days of Hammurabi, both medicine and surgery had been practised for centuries in Egypt, that great country along the River Nile, in northern Africa. One of the most complete and perfect of all the records left us by these ancient Egyptians is a book on medicine, put together by the priest-physicians of that time. It is written, in a simple form of picture writing used only by the priests, on strips of papyrus, pasted together to form long rolls, and was found in an Egyptian tomb. The ancient Egyptians believed that the spirit of a dead person came back to his body, after death, and so they took the greatest care to preserve these bod-

## THE HEALERS

ies by embalming them, making them into mummies by wrapping them up in many folds of fine linen, soaked in the oil of spices and covered with bitumen, a sort of pitch. It is because of this belief that we are able to find, in the tombs of Egypt, so many relics and records of the past. If the Egyptians had buried their dead in the ground, as we do now, they would long ago have crumbled to dust, but sealed up in great tombs carved out of the solid rock, they remain to-day, with their wall pictures and writings, and their rolls of papyrus, to tell us of the life of a vanished civilisation.

From the papyrus mentioned above, as well as from others which have been found, we find that the ancient Egyptians knew a great deal, both about caring for the sick, and healing the wounded. They had dentists, as we have, to look after their teeth, surgeons, who could set broken limbs, using splints made of wood to hold the broken bones in place, treat fractured skulls, or perform delicate operations on the eye, and doctors, who knew how to cure fevers and many other diseases.

## THE FIRST DAYS OF KNOWLEDGE

Men had for a long time known how to check the flow of blood from wounds, how to extract arrow heads, to treat the more simple injuries received in battle, but it was among the learned priests of Egypt that physicians first came to be known as such, although the people of India were not very far behind.

We find in Egyptian tombs many delicate instruments used by the surgeons of those days, such as lancets and probes, scissors, forceps and knives, and among the other operations we read about in the papyrus records is one for removing what is known as a cataract from the eye. Even false teeth were made in those days, and have been found in mummy cases, and some of the mummies, when unwrapped, are seen to have broken arms or legs which have been carefully set and healed. It is a very wonderful thing to be able to look to-day at the work of surgeons who have been dead five thousand years.

The surgeons of India, after the discovery of iron and steel, used over a hundred fine, well-made instruments, including almost all the ordi-

## THE HEALERS

nary instruments which are used by modern surgeons.

But it is to the ancient Greeks that the doctors of our time owe their greatest debt. Hippocrates, the most famous of the Greek physicians, is called the Father of Medicine.

He was born on the island of Cos, off the shores of Greece, nearly five hundred years before Christ. As a young man he first studied the work of the Egyptian physicians, and soon began to improve on what they had done. His idea was to make medicine a real science, instead of hit-or-miss guesswork, and as he grew older he wrote books on the subject which, although written nearly twenty-five hundred years ago, are still of value to the student.

Hippocrates was a great thinker, and also a wonderful physician and teacher. He described with the greatest care, in his books, the various diseases, with ways to cure them, and it was not long before his fame spread all through Greece and the near-by countries. He wrote on such things as fractures, dislocations, wounds in the

## THE FIRST DAYS OF KNOWLEDGE

head, epidemics, and no physician who ever lived did so much to help the ill and the suffering as he did. For two thousand years his works stood to inspire the doctors and surgeons who came after him, and once more we see how valuable it was for men to know how to write. Without a way of writing down and keeping the discoveries that Hippocrates made, a large part of his work would probably have been lost, for while it might be a simple and easy thing for a man to tell his sons how to make pottery, or bronze, it was a very different matter, when it came to telling them about medicine, or surgery. No man could possibly have stored up in his head, and remembered, all the things that Hippocrates wrote in his books.

Books, in those days, were written either on rolls of papyrus, or on parchment, which is made from the dried skin of sheep, and is much the same as the skin used for the heads of drums. Parchment is very durable, and, if kept dry, will last for a long time. But, of course, since in those days the people of Europe knew nothing about printing, every book had to be carefully copied



## THE HEALERS

by hand, and for that reason books were very valuable, and were kept, for the most part, in libraries, where people might go to read them, just as they do now. Alexander the Great, about whom you will read in history, conquered Egypt, along with most of the other countries of the world at that time, and founded, near the mouth of the River Nile, a city, called after himself, Alexandria, and there, later on, a great library of the works of the ancient writers was brought together, with thousands of hand-written books, which students and scholars came from all the countries round about to read.

It was at Alexandria that surgeons first began to dissect, that is, to cut up, the bodies of dead persons to find out what the organs and parts of the body looked like and how they worked. And it is said that some of the doctors of that time, eager to learn about the workings of the heart, and the stomach and the liver and the brain, cut up the bodies of persons while they were still alive, using for this purpose criminals who had been sentenced to death. But even in those far-off days such cruel methods were not

## THE FIRST DAYS OF KNOWLEDGE

thought right, and many of the best physicians were against them.

In Egypt and in India, and later, in Greece, in Rome, and in Arabia with its capital at Bagdad, in the clay country, not far from Babylon, the study of medicine made wonderful progress. Then Rome was attacked and destroyed by savage tribes from the forest country of northern Europe, and for a time most of this learning was lost. Even the great library at Alexandria, of which we have told, was burnt, and the countries of Europe went through a long period of ignorance which we now call the Dark Ages.

It was only a few hundreds of years ago that people began to read and study and think again, and now we have modern medicine.

No work which has ever been done by man is finer or more unselfish than the work of the physician. The thinkers who have laboured from earliest times to heal the sick and bring health and comfort to the suffering, who have shown us how to save life, instead of taking it, deserve our deepest thanks. We owe a great debt of gratitude to the Healers.

## CHAPTER XIV

### THE KING'S MESSENGER

ONCE, a long time ago, there lived in that part of Asia which we call Asia Minor, a boy named Xenes.

Asia Minor means little Asia, and it is called that because it is very small compared with that part of Asia lying farther to the east, in which are such great countries as India, and China, and Siberia.

But while Asia Minor is small, it had a big part in the early history of mankind, for it borders on that wide inland sea, the Mediterranean, around the shores of which men of science now think the civilisation of the world began. Across this sea travelled the Phœnicians, with their many-oared ships, the Cretans from the Wonderful Isle, the ancient Egyptians, and later on the Greeks, the Romans, and the men of Carthage, that great Phœnician city in north-

## THE FIRST DAYS OF KNOWLEDGE

ern Africa which was a rival of Rome, and which the Romans finally destroyed. The history of the countries bordering on the shores of the Mediterranean is many thousands of years old, and even now we know only a small part of it.

In the days of Xenes the people of the country in which he lived were beginning to be civilised. They lived, many of them, in towns, and collected property about them in the form of cattle and sheep and pigs and goats and pottery and rugs and copper and silver and gold. They did not have money, but exchanged things with one another, giving so many sheep for an ox, or a certain weight of silver for a rug, or so many measures of barley or wheat.

Whenever people began to settle down in those days, to build villages and towns, to collect property and live in security and peace, there were usually other and wilder peoples, living in the country around them, in the mountains or the desert, who attacked and fought with them, burning their towns, and carrying off the property they had collected.

To prevent this, the people in the more civi-



WAR!

## THE KING'S MESSENGER

lised countries not only built walls about their towns, as we have seen, but united the different tribes and towns into what we call a nation, which is very much like a tribe, only larger. Usually these nations had a ruler, or king, to lead them, and when the warlike tribes from outside tried to break in, it was the business of the king to call together an army from the different villages and towns in the land, and with this army fight to drive the enemy out of his country.

This was one of the principal reasons why the early nations had kings; they felt safer, joined into a united people, with a ruler to lead them in battle, than they would have felt with each tribe or town fighting for itself.

But it is very easy to see that if the enemy came without warning, as they usually did, and attacked the country suddenly, it took a good deal of time to let all the different villages and towns know that a war had started, and to get their soldiers ready, and march them to the place where the battle with the invaders was going on. While all this was being done, the enemy often had an easy time of it, burning and robbing to

## THE FIRST DAYS OF KNOWLEDGE

their hearts' content. So the kings and rulers had to find some way to send word around quickly, in order that every one might get ready without loss of time.

In these days, when we are able to talk across continents by telephone, and to telegraph messages around the world in a few seconds, it seems a very easy and simple matter to send word to another town one or two hundred miles away, but it was far from being an easy matter then.

Among savage tribes such as are to be found in Africa, messages are often sent long distances by means of tom-toms, or huge drums, the men in one village beating the alarm, and those in the next hearing it as it comes booming through the air and sending it along to still another place by beating on *their* tom-toms. And among the American Indians messages were sent from place to place by means of fires lit on the hilltops, the smoke by day and the flames by night carrying their signals of alarm from tribe to tribe.

But in the country where Xenes lived messages were sent by means of runners, and Xenes was a runner.

## THE KING'S MESSENGER

Even when a small boy he had been able to run more swiftly than any of his companions, and as he grew older, and his muscles became harder and stronger, he was easily the best runner in the town.

The capital of the country was a great city called Sardis, and from there to the place in which Xenos lived was nearly two hundred miles.

This place was not far from the foot of the mountains, and through them ran a wide, rocky pass, going up and up, winding about among the forest-covered hills until it was lost to sight in the shadows.

It was through this gloomy pass that the enemy usually came to attack the towns and villages of the plains. They were fierce and warlike, these men from the mountains, who rode tough, shaggy little ponies, and swept down over the country, robbing, killing and burning.

Sometimes they would come in small bands, which did not stay long, but contented themselves with making a quick dash and then running back to the hills before the men of the plains could attack them. But at other times they came



## THE FIRST DAYS OF KNOWLEDGE

in a great swarm like locusts, and spread over the land in every direction, pillaging and burning. Then it took a long time to get them out again.

The ruler of the country in which Xenes lived was named Gyges, and he dwelt in his capital city of Sardis. For many years the nomads from the hills did not cause him and his people any trouble, but Gyges knew, from what had happened in the past, as well as from what he was told by wandering travellers from the hill country, that they would some day come again, swarming down into the plains to burn and kill and destroy. So Gyges chose swift runners in each of the villages and towns throughout the land, and built stations between these villages and towns, so that from one end of the country to the other there were speedy messengers to carry the news to him at his palace in Sardis. These messengers were not expected, of course, to run all the way from the outskirts of the country to the capital. They worked in relays, like the runners in a relay race. Each would go a certain distance as fast as he could, and then turn the message he carried over

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to another runner who was waiting for him, and who would carry the message to the next station, and so on. In this way, if the enemy broke in, it did not take very long to send word from the frontier to the capital at Sardis. If a runner could cover thirty miles in four hours, six of them could make a hundred and eighty miles in a night and a day, and in a short time the whole country would learn the news and be ready for battle.

Gyges gave orders that matches be held in every village and town, so as to find out which were the swiftest and best runners, and these were chosen to be king's messengers, and carry his commands to and from the far-off parts of his kingdom.

When the races took place in the town in which Xenes lived he was overjoyed when he proved to be the swiftest runner of all, and was picked out to be one of the king's messengers.

Near the mouth of the great pass which led up into the mountains Gyges placed sentinels, to watch for the enemy and report as soon as they should appear. If they came, word was to be sent to him at once.

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Time passed, but no invaders appeared. The soldiers and sentinels of Gyges had heard many tales about these fierce barbarians, but they had never seen any of them, except a few straggling bands, and after a time they came to think that the terrible stories they had heard about them were not true. So instead of watching carefully day and night they grew careless, feasting and drinking, and sometimes they became drowsy and slept at their posts at the mouth of the pass. Xenes, however, did not become careless. He kept his muscles hard and strong, exercising and rubbing himself with oil. And when the captain of the guard at the mouth of the pass sent word to the king every few days that all was well, Xenes ran as fast and as hard as though the enemy had really appeared and were after him with their arrows and spears.

One dark night, after a feast in honour of the great Mother Goddess whom these people worshipped, the guards at the pass were all asleep. And on that very night the barbarians came creeping down from the hills like shadows, their weapons in their hands. Finding the sentinels

## THE KING'S MESSENGER

of Gyges asleep, they killed them, and then sent back word for the main body of their companions to come on.

All during the night the invaders poured like a flood down through the pass into the valley, spreading out over the country. At last they reached the town in which Xenes lived, surrounding it on every side so that not a soul could get out. Their bands of horsemen rode far into the country, so as to cut off and kill any one who might try to give the alarm. By morning there were thousands and thousands of them in the plains, with more coming through the pass every hour, until the country round about was black with them as far as the eye could reach. And Gyges, resting peacefully in his palace at Sardis, knew nothing of the danger which threatened him and his country.

Xenes slept in a little hut on the outskirts of the town, close beside the main road leading to Sardis. Had the captain of the guard in the pass not been asleep, the king's messenger would long ago have been speeding on his way toward the capital, bearing the word of alarm. But the

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captain was dead, by now, and no runner came to Xenes to tell him of the danger. The next messenger, thirty miles away, would wait in vain for Xenes to appear, and as he was forbidden to move until the tablet bearing the seal of the captain of the guard had been turned over to him, he would no doubt be surrounded and killed.

When Xenes awoke it was dawn, and distant cries and shouts from the town walls told him that something terrible had happened. He slipped on his sandals, tied a cloth about his waist and was ready to start.

He stepped to the door of his hut and saw the invaders swarming everywhere about the walls of the town, shooting arrows, throwing stones with their slings, shouting their battle cries. They had taken no notice of the little hut, and did not know that in it was a king's messenger, ready to run like the wind in the direction of the capital, giving the alarm.

Xenes looked carefully along the road he must take and to his dismay saw that it was crowded with the enemy as far as he could see, all going in the direction of Sardis. If they could get

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there before the king's armies could be made ready, the city might be captured, and Gyges taken and slain.

Xenes saw at once that he could never make his way along the road to the next messenger, with the enemy in his path. And he felt sure that even if he did, there would be no runner waiting for him at the little roadside station, since the barbarians, on their swift ponies, would certainly capture and kill him long before Xenes could get there. So he made up his mind to take another and shorter course he knew, across the plains, and if necessary run all the way to Sardis himself. It was nearly two hundred miles, but he decided to do it or die in the attempt.

But first he knew that he would have to escape from the hut and pass through the enemy's lines, and this was likely to prove a very hard matter, if any one saw him. So far they had taken no notice of him at all.

Just then one of the barbarians, passing by the hut, saw Xenes peeping out through the door, and ran in to kill him.

Xenes, however, who was very quick, dropped

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to his knees like a flash and tripped the other man up, so that he fell sprawling on his face upon the floor.

In an instant Xenes was on his feet and snatching up the short spear which had fallen from the barbarian's hand, drove it through his body and killed him. Then, as quickly as he could, he took the clothes from the other man's body and dressed himself in them.

There was a peaked cap made of wool, a coat of tanned leather, woollen leggings and loose high shoes coming above his ankles. There were also weapons, a shield, a short bow, with arrows in a quiver, and the spear with its broad point of bronze. In a few moments Xenes had put on these things and stepped into the road.

Although the sun had barely risen, he felt very warm and uncomfortable, for he was not used to thick clothes such as the people from the mountains wore. When he ran he wore nothing at all, except his sandals, and the loin-cloth about his waist.

He did not go along the road to the west, through which the enemy was now streaming, but

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turned back toward the pass, making a wide circle so as to reach some low hills at the other side of the town. As he walked along he limped, as though he had been wounded, and when some of the barbarians, passing him on their way to the town, called to him, he did not answer, but pointed to his leg as though in pain and hurried on.

At last he reached the little range of hills, and hiding among the trees and bushes which covered them, looked out over the country. In every direction he saw the enemy bands, burning the villages, driving off the herds, killing the people. If he could only wait until nightfall, he would be safe. But there was no time to wait. So, burdened by his heavy clothes and weapons, he began to run, keeping himself hidden by the bushes and trees as well as he could.

For hours Xenes ran. Whenever he came upon any of the enemy bands he slowed up, and trudged along as though on his way to join the main body. But as soon as he was out of sight he began to run again. He had no food, except a little fruit, and some scorched bread he found



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among the ruins of a deserted village, but he went on and on, straining every nerve to get beyond the enemy's lines.

The barbarians, stopping to burn and plunder, did not go as fast as he did and by the late afternoon he found that the smoke of burning villages and farms, which up to now had been ahead of him, was at last behind or on either side. Then he crept among some bushes and taking off the heavy clothes he wore, bathed himself in a cool stream.

Now Xenes began to run in earnest. Swiftly as an arrow he sped through the night, sometimes by narrow roads and paths, sometimes across fields which were rough and uneven, and hurt his feet cruelly. Once a group of the enemy, sitting about a camp-fire, spied him, and when he did not answer their cries shot at him with their arrows, but before they could mount their horses Xenes had vanished in the darkness. All night long he ran, the blood pounding in his temples until he thought they would burst, but there was no time to rest; he must keep on, if the country was to be saved. When morning came, Xenes

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had run over a hundred miles in twenty-four hours, without rest or food.

He thought now, as he paused beside a stream to cool his tired feet in the water, that if he could find the main road he might deliver his word of danger to one of the other messengers, and let him carry it on. But Xenes did not know where the main road was. And he could not be sure that some of the advance scouts of the enemy, on their shaggy ponies, had not ridden along it ahead of him. So he decided to keep out of sight and go on. Sardis, he knew, lay to the west. He could tell the direction easily enough by the sun.

There was another reason, too, why Xenes did not want to turn his message over to any one else. It would have hurt his pride to ask for help. He was a king's messenger, and he wanted to show Gyges that he could be depended on to do his duty, no matter what the cost. So after a little rest he sprang forward again, running, running, hour after hour through the hot sun until it seemed that his heart would burst or his legs give way under him.

After a time he came to a village beside a road

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paved with stone. Here the people gave him food and drink, but he ate very little. He told them of the invasion of the barbarians, but they said they had seen nothing of them, and some did not believe him, claiming that if the enemy had come, the runners along the road would have brought the news.

Xenes did not stop to argue with them. Sardis, they told him, was still a long distance away, so after a brief rest he was off again, very tired and foot-sore, but still determined to reach the capital by morning.

All the second night he ran, driving his tired body onward, his head reeling from fatigue, his feet bleeding, but his courage as strong as ever.

The last few miles were the hardest, and it seemed to him that he could never make them, but he kept on, along the edge of the stone-paved road. Once he opened the station of a runner, but the man in it was asleep. No messenger from the east had come flying in to awaken him. For a moment Xenes was tempted to give up, and allow the other man to take his place, but his pride would not let him, and he staggered on.

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At last, just as the rising sun broke through the mists, Xenes saw the walls of Sardis ahead of him. The gates were just being opened for the day. Gasping for breath he stumbled up to the guards and telling them that he was a king's messenger, asked to be taken before Gyges at once.

At first the men laughed at him. No one could wake up the king at such an hour, they said. But Xenes begged so hard and seemed so much in earnest that finally they took him to the palace, one man helping him on each side, for by now Xenes could scarcely walk.

When Gyges heard the story the captain of the guard brought him, he rose from his couch and came into the audience chamber where Xenes stood, gasping for breath. With a cry the boy stepped forward, fell upon his knees.

"The barbarians are coming!" he exclaimed, then fainted.

Quickly Gyges gave orders to his captains, and runners were sent in all directions, summoning his armies. He was a wise ruler, and knew that Xenes told the truth. An hour later, when the boy, strengthened by food and drink, told his

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story, the king listened in wonder. None of his messengers had ever before run nearly two hundred miles in two days and nights. When Xenos had finished, Gyges took his own gold chain and placed it about the boy's neck, ordering that he be given every honour and care. Then he went out to take command of his troops. Other runners had come in by now, bringing the alarm, but it was not until night that the first of the barbarians arrived before the city walls, and to their surprise and disappointment Gyges and his men were ready for them.

A long and bloody war followed, and it was years before Gyges was able to drive the enemy out of the country, but he did it at last, and all the people gave honour to Xenos, the king's messenger, who by his pluck and courage had saved his country and its capital from destruction.

When we look back and think of the danger the people of the early nations were in, because they could not send word from place to place quickly, we can see how important it was to be able to spread the news. Hundreds of years later, all through the country of Gyges, and the

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valley of the two rivers, a new and greater nation rose, and these people, called the Persians, used relays of horses, instead of runners, to carry messages from one part of their kingdom to another. That was five hundred years before Christ, and from then down almost to our own time, post horses for carrying the mails, and couriers on horseback riding swiftly across the country from place to place were the only ways that people had to send the news about quickly. You will all remember the famous ride of Paul Revere.

But after steam locomotives came into use, and the telephone and telegraph were invented, everything was changed, and now we read in the newspapers each morning at breakfast about things that have happened a few hours before, in China, or South America, or Australia, just as though they had happened next door. Think how long it would have taken, in George Washington's time, to bring news from Peking, or Moscow, to Philadelphia. People heard of things months and even years after they had happened, or often never heard of them at all.

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Knowledge of ways to spread the news has changed the world, and made it smaller and smaller until now it is just like a village, in which everybody knows in the morning what has happened to his neighbours the night before.

## CHAPTER XV

### THE TRADERS

WHEN Orus was a small boy he used to sit on the shore beside his father's house and watch the ships going to and fro over the blue waters of the harbour.

Orus lived on the Wonderful Isle of Crete, and his father was the captain of a ship, and was away from home for weeks and weeks at a time, so that Orus did not see him often.

When his father came back from his voyages, however, Orus was always very eager to hear the stories he had to tell of other lands to which he had gone.

"Why do you go to these strange places?" Orus asked his father one day, "and what do you do there?"

His father laughed, and tried to explain.

"I go to trade," he said. "A long time ago, when the earth was young, and there were only



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a few people here and there, everybody had whatever they needed. Of course they did not need much, for in those far-off times all anybody wanted was food to eat, and skins to wear, and flint or copper for their axes and spear heads.

"But all that was long ago, and no man living can remember the days of it, or number the years that have passed since then. I have heard my grandfather say that he has seen pictures on the rocks across the sea that were carved when men knew nothing of metals, and used tools of stone, but I have never seen them myself. It must have been thousands of winters ago, but only the gods know how long.

"After a while people began to build towns and cities, like our great city of Cnossos, where dwells Minos, the king, and to build ships, too, in which they might sail to other lands.

"So when men from one place went to another place, whether by ships, with oars and sails, or by caravans, winding their way across mountains and plains, they took with them the things of which they had plenty, and exchanged them for

things of which they had none. And that, my son, is trade. I have just come from a great country across the sea called Egypt, where people live along the shores of a mighty river, and lift water from the river with wheels, to spread on the land and make things grow. These people also have ships, and bring from the lands of the south wonderful things, sweet spices, and ivory, which comes from the tusks of a huge beast you have never seen, and jewels, richly carved, and papyrus, which is made from the outer skin of reeds, and is used to write on, and a fine white cloth called linen, softer and cooler than that made from wool, and sweet-scented woods, for carving, brown, and red, and some black as night. And in that country they have pitch, which comes out of the earth, and is used in building ships, and many strange animals and birds which we do not have here.

“So if we want those things, we must carry to that country other things, that they have not, or of which we have more than we need, such as fine bronze and other metal work, tin, which we bring

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from the cold islands of the north, rugs and carpets of wool, from the east, and oil from the great fish our sailors kill, and many other things.

"The people of that land give us, in exchange for what we bring, the things we want, and in our ships we carry them back home with us.

"And sometimes we go to a great city called Tyre, where men live who are skilled in the dyeing of cloths. From the bodies of tiny shellfish that live in the sea they press a dye, and with it colour cloth a beautiful red-purple which is greatly prized for making king's robes, and nowhere but in Tyre is this wonderful dye made.

"Down to that city and to others near it come caravans from the countries to the east and north, bringing carpets of wool, of many colours, and cattle, and sheep, and leather, and jewels, from the mountains, and copper, and silver and gold, and cedar wood from the great forests near by, and the skins of beasts, all of which we bring back for our workmen to use.

"That is why our ships go from place to place, to the east and to the west, to the north and to the south, setting their courses by the sun and



DOWN TO THAT CITY COME CARAVANS  
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the stars, daring the wind and the waves, the heat and the cold, that there may be beautiful things for people to see and wear and use in our Island of Crete.

"Some day, when you are older, I will take you with me to these strange lands and let you see their wonders for yourself. In the country of Egypt I have seen images cut from solid rock twenty times as tall as a man, and pyramids of stone so high that their pointed tops reach almost to the stars. But even in that country there is no finer city than our own Cnossos, for it is the most splendid city in the world."

When the father of Orus was telling his son about trading, as he knew it thousands of years ago, he was telling the story very much as it is to-day, except for one thing. In those early times men did not use money. They exchanged things, one for another, so many sheep for a horse, so many measures of grain for a pig, so much cloth for a pottery jar, or a bronze sword. But, as it is easy to see, this was often a very awkward way in which to trade. Caravans, toiling for hundreds of miles over deserts, or through rough

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mountain passes, might not want to exchange their spices or their rugs for ivory, or linen, or glass. They might want something else, which the people with whom they were trading did not have. But all they could do, before men began to use money, was to take what they could get, and carry it to some other place where the people had what they wanted, and this was not easy, especially if the things were heavy and hard to carry. A man with furs, meeting a man with grain, for instance, could not trade very easily if the one who had furs to sell did not want grain, but wanted a rug, and if he took the grain in exchange, he might have to carry it a long distance to some place where people had rugs to sell. If he could have sold his furs for so many pieces of gold, he could easily have carried the gold away in his pocket and bought with it what he pleased. So, to make trading simpler and easier, people began to use money.

At first all sorts of things were used as money. In ancient Rome ten sheep were held to equal one ox, just as we have ten dimes in a dollar, and among the Greeks, too, the value of things was

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so measured. But think how hard it must have been to buy and sell things in that way. Suppose you wanted to buy a suit of armour worth twenty sheep. You would have had to go shopping driving a flock along with you. What men needed as soon as they began to trade in a big way was something that was easy to carry, and which, because it was precious and rare, had about the same value everywhere. So finally men began to use the metals, copper, silver and gold.

Before then, however, many other things were used as money, sea shells and beads—we have all heard of the Indian's wampum—iron, the feathers of rare birds, measures of wheat and other grain, cocoanuts, tea, even tobacco, as you will see by reading about the early colonists in America, before the Revolutionary War. In those days a man could buy a farm, a silk dress, or even a wife, for so many hogsheads of tobacco.

But money, to be of use in trading in different countries, had to be valuable in all those countries. Feathers of birds might be of value in the South Sea Islands, but they would not buy anything in places where people had :

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feathers. And tea or tobacco would be of no value in countries where people did not use such things. But the rarer metals, such as silver and gold, are valuable everywhere, because they are rare and hard to get everywhere. So in course of time they came into use as money, for wherever you went people would accept them in exchange for what you wanted to buy, just as you would accept them yourself in exchange for what you had to sell.

Money, then, we see, was something in which the value of other things could be measured, and expressed, something which could easily be carried about, which had the same value everywhere, and would keep that value from year to year without any great change. It was also something that could be divided. If an ox were equal to ten sheep, and you wanted to buy only five sheep, you could not very well cut your ox in half, while a piece of gold or silver could easily be cut in two without injuring it.

The precious metals are the only things that men have found so far that will fill all these needs, and that is why gold and silver, and to some



## THE TRADERS

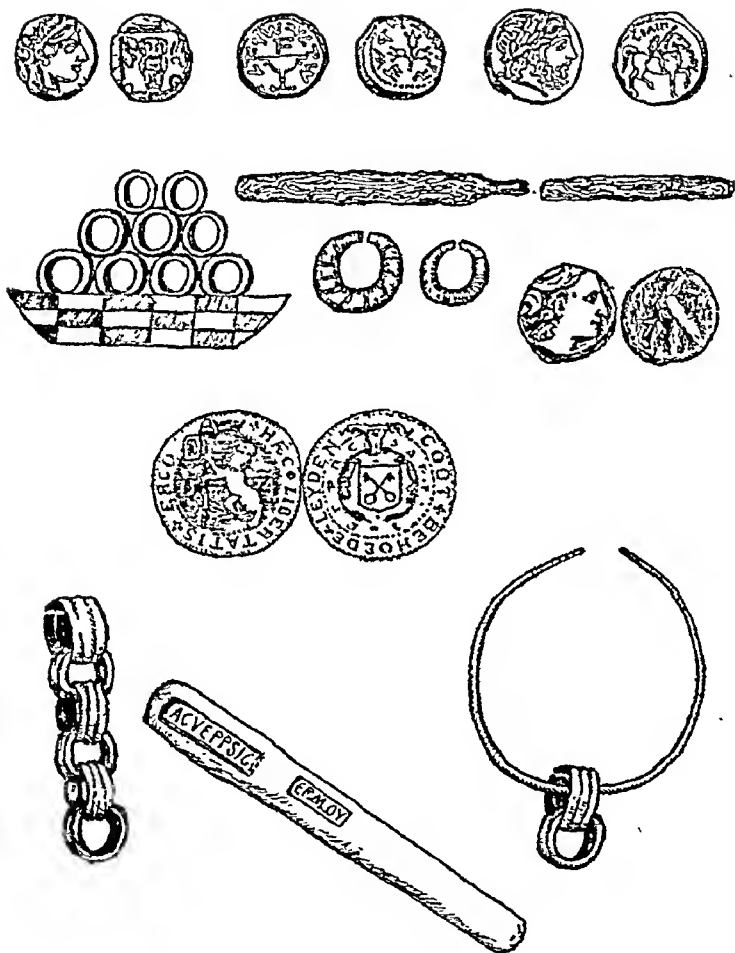
extent, copper, are used for money to-day. Of course we use paper money, but that is only a sort of check, a promise to pay. If you look at a paper dollar you will see that by taking it to the United States Treasury in Washington you can exchange it for a silver or a gold dollar if you want to, but nobody does, since metal money in large amounts is awkward to carry about. For instance, you could carry a ten thousand dollar note in your vest pocket, if you were lucky enough to have one, but ten thousand dollars in silver you could not even lift, and in gold it would be a very heavy load indeed, for a man to carry about all day. In olden times stamped pieces of leather were sometimes used for money, as we now use paper.

Among the first users of metal money were the Chinese, who made coins of copper and iron, as did the early Hebrews. The Greeks and Romans also used iron coins, but before this time gold coins or pieces were used in the country of Gyges, which was called Lydia. Lydia was a great trading nation, with seaports on the Mediterranean across the water from Crete, and one of

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its kings, named Croesus, became so rich that even now we speak of a very wealthy man as being "as rich as Croesus." Not long ago a number of stamped gold coins were dug up in the neighbourhood of the ancient capital of Sardis, which are among the oldest known coins in the world.

But even before stamped coins were made, pieces of gold and silver were weighed and used as money. There are ancient Egyptian pictures which show heaps of gold and silver rings being weighed in the scales. Pieces of gold and silver, when they first began to be used as money, were always weighed, to find out their value. Later it became the custom to stamp on these pieces or bars first the purity or fineness of the bar, and then its weight, to save the trouble of weighing them over every time they were used. But this did not work so well, since people would shave off some of the bar and keep it, without it being known that the weight had been reduced. So finally it was found easier to stamp the metal in the shape of coins, with milled edges. You may have wondered why it is that coins have these milled edges, that is, have tiny grooves across



# ANCIENT COINS

Also stamped Bars, and Rings and Ornaments, used as money.

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their edges all the way around. It is done to keep people from cutting gold or silver off the coins, as they could easily do, without any one knowing it, if the pieces had smooth edges. Cubes of gold, stamped with their fineness and weight were used in China a long time ago, but whether before or after the gold pieces of Lydia we do not know.

While ancient coins were made in many different shapes, almost all the nations finally came to use the round, flat pieces of money we are now familiar with. Usually the head of a king or other ruler is used on the coins, with devices of various sorts, not only to make the coins attractive, but to render it hard for counterfeiters to imitate them. It is a crime for any one to make money except the government, and even if you were to make a gold piece with the same amount of gold in it as the government uses, it would still be a crime, and you could be put in jail for it. Governments have found it necessary to make all money themselves. If others were allowed to do it, the country would soon be flooded with all sorts of coins, good and bad, and no-

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body would know which ones were the good ones and which were not.

We can easily see, now, how valuable to the early traders money must have been. A caravan, travelling for many weeks from China into Persia, bringing its precious loads of silks, could sell the bales it brought for gold and silver, which the traders could easily carry back with them, or could take to India on the way home, exchanging it there for ivory, or jewels, or fine silver work. Or a ship from Tyre, with its famous purple cloth, came to Egypt, let us say. The master of the ship might want tin, from Crete, which the Cretans had themselves brought from Cornwall, on the coast of England. He could sell his purple cloth to the merchants of Egypt for gold, brought probably from Ethiopia, or Abyssinia, take the gold to Crete and buy tin with it to carry back for the bronze workers of his city of Tyre.

Money made trading easy. It did a very great deal to bring about the quicker spread of civilisation among the different nations and peoples of the earth. Without it, men could not have

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traded with one another the way they did, and the spread of ideas, and arts, and inventions from one race to another would have been much slower. So when you think of gold and silver, you should remember that they, too, as well as iron, have had a part in the earth's history far more important than their mere use for making bright and shining ornaments. Even to-day gold is the basis of all money, of all trading between nations, and this makes it of the utmost value to mankind.

## CHAPTER XVI

### THE STATUE OF THE KING

ANI was the son of Khenshotp, and lived in Egypt along the banks of the Nile, near a city called Memphis.

His father was an architect and builder, and a very great man under the rule of the king, whose name was Chephren.

This King Chephren was a rich and mighty ruler, and like King Cheops, who came before him, had a passion for building splendid monuments, and temples, and statues of stone.

It was King Cheops who built the great pyramid near Memphis, of which you have no doubt seen pictures. It is a huge pile of stone blocks, nearly five hundred feet high and one of the greatest works ever built by man. And it was King Chephren who built the second of these three huge pyramids which still stand there near

## THE STATUE OF THE KING

the banks of the Nile, wonderful monuments to the skill and patience of men who lived over five thousand years ago.

These three pyramids, and the stone Sphinx near them, rise from a stretch of high level ground called a plateau, and leading up to this plateau King Chephren caused a splendid road to be built, at the entrance to which was erected a stone gateway in his honour.

In this gateway he ordered that a statue of himself should be placed, and it was to his architect Khenshotp that he entrusted the carrying out of these great works, giving him much money, and thousands of slaves, with which to perform his tasks.

These things took many years to build, and while the work was going on, Khenshotp's son, Ani, would go day after day with his father to watch the workmen as they split the huge blocks of stone with wedges, or cut them with copper saws having teeth made of a hard black substance called emery, or fed emery dust into the saw-cuts as the copper blades went deeper and deeper. And he saw the stone-workers dress off



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the faces of the blocks with pieces of harder stone held in their hands, until they were smooth and ready to be set into place. Then the slaves would come, hundreds of them, with rollers of hard wood, and ropes, and under the whips of the slave-drivers would pull and haul and strain until the great blocks were moved to the places fixed for them in the plans. But most often Ani would go to the sheds where master workmen were carving ornaments and statues with tools of stone, and of copper, with hard jewels set in their points, for fine work, cutting the toughest stone. And as the years went by, Ani thought that he, too, would like to be a master sculptor, and carve beautiful things.

As he grew older he made himself a workshop in one of the many rooms of his father's great house, at the far end of the walled garden, and here he would spend hours every day, chipping and carving statues of animals, and men, and gods. But because his father was such a great man, and so busy with the work the king had commanded him to do, Ani did not tell him of his ambition to become a master worker in stone,

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thinking that his father might laugh at him. But year after year he watched the other master carvers, and because he was the son of Khenshotp, the king's architect and builder, they gladly taught him all they knew.

With one of these master workers, whose name was Kheti, the young sculptor would talk for hours about the carvers of old, and the work they did.

From the most ancient times, so Kheti told him, there had been men who loved to make pictures and carve statues of the things they saw about them, at first just simple heads and figures of clay, or bone, or rude drawings scratched on bits of slate, and later, queer little statues of wood, and ivory, and stone, with the two legs joined together, and staring eyes made of white shell beads. And in the great collection which Khenshotp had gathered in his house Kheti showed his pupil these ancient statues, and brown pottery vases with figures on them in red, heads and whole figures of men and animals cut in limestone, and other heads of wood, and great limestone slabs with pictures carved on them, which

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Khenshotp the builder had taken from the ruins of ancient cities, and placed in his collection.

Kheti also told the boy of the great statues, and rock carvings, and temples of other lands, of which he had heard from travellers, winged bulls of stone as big as a house, statues of warrior kings carved in the sides of mountains, huge and terrifying, and figures of mighty gods, to which men and women and children were sacrificed.

Because of the things that Kheti told him, Ani came to understand that in all ages, in different parts of the world men have worked in clay and wood and metal and stone, striving to make beautiful things, and these men, Kheti explained, were artists, to whom God had given the great task of bringing beauty to the world.

All these things Ani thought about, and treasured in his heart, for he, too, wanted to create something beautiful, that might live after him, instead of going through life idly and being forgotten, as most men are. So year after year he worked away at his blocks of stone, always trying to make each one better than the one he had done before, but none of them satisfied him, and

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he would break them with his hammer and begin a fresh one.

He did not show his work to any one but Kheti, and the old man, seeing him turn away in anger one day from a figure of Anubis, the God of Darkness, that he had just carved, spoke to him, for he knew that Ani was a great artist.

"My son," he said, "why do you destroy the beautiful things you have made?"

"They are not good enough," Ani replied. "I must do better," and went on with his work.

Among all the things which King Chephren had commanded his chief builder Khenshotp to make for him, the hardest of all was the statue of the king which was to stand in the gateway of the road leading to the plateau of the pyramids.

This statue Khenshotp wanted to make the greatest glory of his life, and for that reason he sought for a long time among the master carvers of the land, trying to find one who was worthy of the task. But while the work of many of them pleased him, and he found it good, there was no one whose skill equalled that of the famous sculptor Septh. And Septh was an old man,

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whose strength was failing him, so that he feared to undertake so great a task as to carve a statue of the king.

At last, however, Khenshotp persuaded him to try it. A huge block of stone was brought to the shed behind the house where Septh lived, and he set to work.

Each day Khenshotp came to see how the statue of the king was getting along, and as the lines of the head began to show from the solid rock, the heart of the chief builder became glad, for he saw that the figure the old sculptor was carving would be one of the finest in all Egypt.

One evening, as Khenshotp sat with his son Ani in his walled garden, listening to his slaves play upon the harp, a messenger came running in with dreadful news. Septh, the great sculptor, was dead. He had fallen before the king's statue, his hammer and chisel in his hands, leaving his work undone.

The heart of Khenshotp was heavy. Who now would be able to carve the statue of the king. He went to look at the figure on which Septh had been working, but it was only just begun, and

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with a sigh he turned away, and ordered the door of the workroom sealed.

There was but one thing to do. He would command all the best sculptors in the kingdom to each make a statue, and from them Chephren himself should choose the one he liked best.

But Ani, who had stayed behind in the deserted workroom of Septh, gazed at the unfinished statue and wept, because so beautiful a thing as it would surely have been could not now be given to the world.

As he stood there, Kheti came, bringing workmen to seal up the door, and told Ani of the orders his father had given, that all the master-carvers of the land should make statues of the king, so that Chephren himself might choose the one which best pleased him. It was Kheti's thought that Ani should try his hand as well.

"None can do better," he told the young sculptor. "It may be that yours shall please Chephren above all the others. Will you not try?"

Ani, standing before the unfinished figure of the king, had a sudden thought.

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"Seal up the door, Kheti," he said, "but leave you an opening where no one can see it, by which I may come and go."

So Kheti, who saw what Ani had in mind, sent away the workmen who had brought the mortar and stones, and himself sealed up the door. But in a corner of the wall he set a loose slab, which might be turned aside, leaving a hole through which a man could crawl.

When Kheti had gone, Ani lit an oil lamp which stood in the work-room, and taking the hammer and chisel with which Septh had been working, went up to the rough block of stone. A feeling of wonder, of joy, came over him; it seemed to him that the spirit of the dead sculptor stood at his side, guiding his hand, telling him to have no fear. With a smile of confidence on his face, Ani set his chisel against the stone and raising his hammer, struck.

The day for judging the statues of the king had come. Chephren, in a litter of ivory and gold borne by eight Ethiopian slaves, headed the procession which made its way from the city to the great gateway at the entrance to the pyramid



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road. Behind him came priests and soldiers, captains and officers of the court, followed by a vast throng of people, all eager to see the work of the master-sculptors.

Along the front of the wide gateway ten finished statues had been set up, each covered with a cloth of purple linen embroidered with gold. Not only the king, but even a statue of him, was looked on as sacred in those days, and had to wear royal robes.

The great king descended from his litter and sat upon a throne of ebony, inlaid with gold and rubies and sapphires and other precious stones, which had been placed in front of the statues. Over the throne a blue and gold canopy kept away the hot rays of the sun, while slaves on either side fanned the king with huge fans made of brilliant peacock feathers. Khenshotp, the master-builder, knelt before Chephren, awaiting his orders. Then the king commanded the statues to be unveiled.

As each of the sculptors, one after the other, drew the covering from his work, the king gazed

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at it eagerly, but no smile came to his face, although every one was watching him for some sign. At last all ten of the statues stood in a row facing him, great figures of stone, splendidly carved, but without that look of life we see only in the work of those rare men who are inspired by genius.

The king sighed and shook his head, and all the people sighed with him, for none dared to think differently from the way the king thought, no matter what their own ideas might be.

Khenshotp bent before the throne in humble sorrow.

"Master," he said, "we have done our best."

The king gazed at him, frowning.

"Bring forth the unfinished statue of Septh," he commanded.

Khenshotp hastened to give his orders, sending Kheti with many slaves to bring the statue before the king. Ani, who had hurried on ahead, entered the dark chamber as soon as the workmen had broken down the door, and threw a costly robe over the figure on which he had been working. Then, with the help of the slaves it

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was swung between two great wooden beams with ropes, and carried before the king.

"If Septh had but lived," Khenshotp groaned, "we could have placed before the king a statue worthy of him, but, alas, it is but a thing begun."

"Let it be uncovered," Chephren commanded, "that I may look upon it."

Quickly Ani drew aside the cloth which shrouded the figure, and a shout went up from the crowd as they saw the look upon the king's face. The statue which Ani had finished was noble, commanding, a thing of beauty and power. Even Septh himself could not have made so great a work of art. Khenshotp stood speechless, thinking a miracle had been performed by the gods.

But Chephren, who was a very wise king, saw the look of pride on Ani's face and smiled.

"Who hath dared to finish," he asked, "the work which my servant Septh began?"

Ani threw himself on his knees before the throne.

"It was I, O King of Kings," he answered, "hoping to please thee."

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Chephren raised his hand, in which glittered a jewelled sceptre.

"I, Chephren, Lord of the Upper Kingdom and of the Lower, command that my servant Ani shall henceforth be master of all carvers of stone within my kingdom, and none other shall be held worthy to fashion the image of the king!"

So Ani rose from his knees, the first sculptor in Egypt, and the statue of King Chephren, carved so many thousands of years ago, has been found among the ruins of the forgotten gateway and now stands in a great museum, for every one to see, one of the finest works of art made in ancient Egypt.

But it was not in Egypt alone that men were carving these beautiful things in stone. We find splendid statues and carvings on temple and palace walls in many other places, Babylon, Assyria, the ancient cities of India and China, even among the great ruins of the past in Mexico and Peru.

In Egypt, as in other places, however, men grew careless in their work, instead of always trying to make it better, as Ani did, and for a

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time much of the great art of the sculptors was lost. It was not until almost three thousand years after the time of King Chephren that it once more reached great heights, and this time it was in Greece.

Greece, you will remember, was the country across the Mediterranean Sea from Egypt, which was conquered by men who came down in wheeled ox-carts from the forests of the north.

They were rough, almost barbarians, at first, but after hundreds of years they grew civilised, in their new homes, learning much from the dark-haired people they had conquered, and as they grew civilised, they began to think about art and beauty.

Great sculptors among them, such as Phidias, and Praxiteles, carved figures in marble so beautiful that no man has ever equalled them since, and when you go through some museum and see such splendid works of art as the winged "Victory" of Samothrace, the "Venus" of Melos, from which the arms have been broken, as the head has been broken from the "Victory," or the beautiful figures of Apollo, or Hermes, or Aphrodite,

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you will see statues which were carved by the sculptors of Greece before the time of Christ.

From the rude little images which the early men made of clay and stone, down to these splendid figures of marble, so life-like that as you look at them you almost expect to see them move, was a long road, and it took a great many thousands of years for men to travel it, but, as we have seen in other things, there have always been thinkers and dreamers to carry on the progress of the world. We should each of us, no matter what our part may be, try, as Ani the sculptor did, to make our work better and better, and not be content with things that are just "good enough." That is the only way to go ahead.

## CHAPTER XVII

### SLAVES

WE have seen, in reading about the great pyramids of Egypt, that slaves were used to build them, toiling day after day in the hot sun under the whips of the drivers. And perhaps you have wondered how it happened that some men were slaves, and had to work for others in this way.

The reason is a simple one. Most of these people became slaves through war.

A great conqueror, such as Sargon, who took the cities of the clay country of Mesopotamia, made the people whom he conquered slaves. He might kill them, or make them work for him, as he pleased.

As we have read in the chapter on making the sun work for us, the early peoples were always trying to find new sources of Power.

Just as we do things by steam power, or electric power, to-day, the men of those times did

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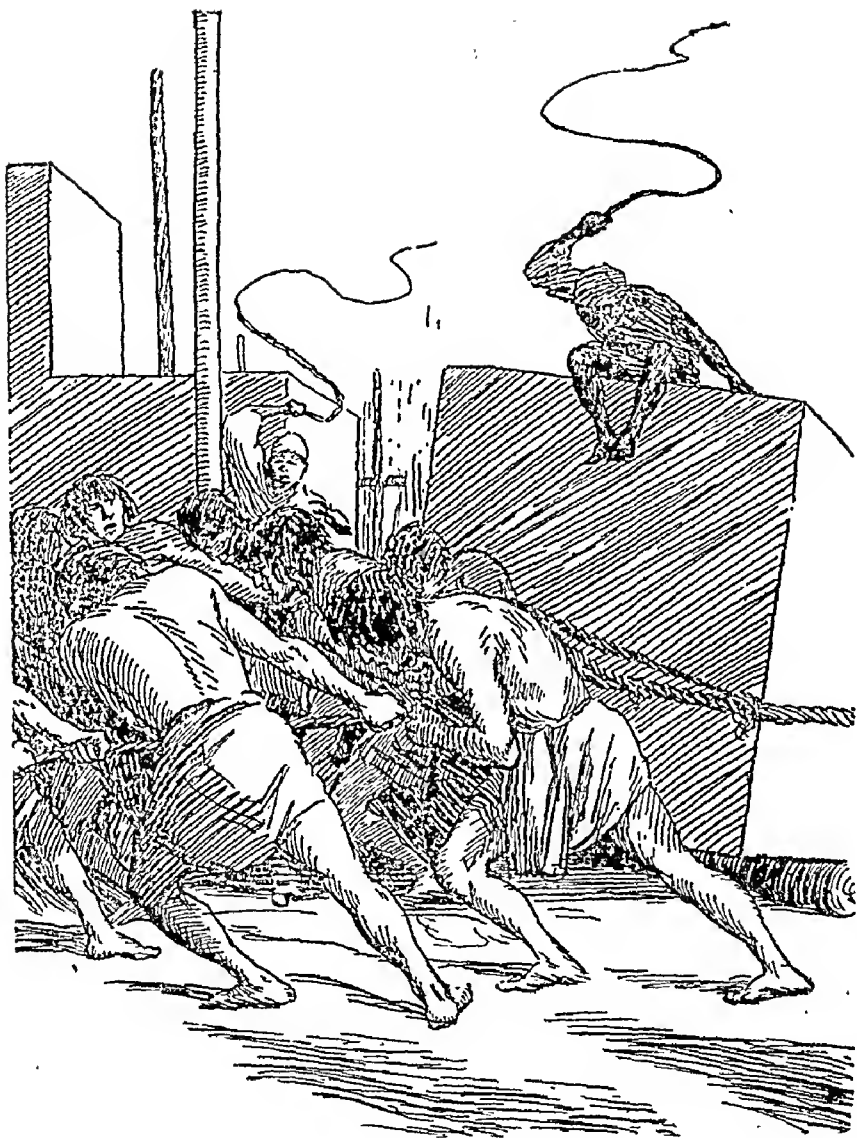
things by the power of animals, and wind, and water, and other men.

While they found ways to make horses and oxen work for them, pulling their carts, turning their water wheels, ploughing up the soil, or to make the swift currents of rivers, and the wind, work for them, driving mills to pump their water or grind their flour, they did not know how to use these sources of power on a big scale, as we do now.

Their wind-mills and water-mills might grind a little grain, but they were of no use at all when it came to building great temples or cities, huge piles of stone such as the pyramids of Egypt, or the Great Wall of China, two thousand miles long, with enough material in it to make a wall three feet thick and eight feet high all the way around the earth.

Such works as these call for power so vast that we can hardly measure it, and we are only now beginning to find out how to use the power in nature to do such things. When we see a huge steam shovel doing the work of fifty or a hundred men, we can understand how it was possible





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to dig the Panama Canal, and when we see a powerful derrick or crane lift masses of steel weighing a hundred tons, we can understand how it is possible to build a battleship, or a great bridge.

But in those far-off days, when kings and emperors wanted to carry out some great work; when there were canals to be dug such as those which spread for hundreds of miles over the country between the two rivers, or walls to be built such as those of Babylon, said to have been so thick that four chariots could drive abreast on top of them, or great stones like the obelisk in Central Park, New York, to be carried many miles from the quarry where they were cut to the places where they were to stand, or blocks of stone like those in the pyramids, weighing many of them over fifty tons, to be cut, and moved, and lifted into place, we can see at once that the only power men had in those days was man power, and that is why conquered people were made slaves.

We, in our times, think of slavery as a wrong and terrible thing, and so it is, but in those days

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people did not think of it in that way. There was certainly no need to build the pyramids, and the labour of the slaves who worked on them was wasted. But not all the great works done by the rulers of the past were so useless. The canals of Mesopotamia, of which we have spoken, by irrigating that country, caused it to blossom and bear fruit from end to end, and since only by man power could those canals have been built, we can see that in such works, at least, the rulers were right to gather the conquered people into bands and make them work for the good of the nation.

The same thing is true of the Great Wall of China, which was built to defend the Chinese people against the attacks of the fierce Mongolians to the north. Such great tasks require organisation, that is, require that men should work, not each for himself, but all together for the common good. And in those days the larger part of the people were too lazy and ignorant to get together and do these things on their own account, so they had to be made to do them by some one else, or the things would not have been done at all.

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Even to-day we have something of the same sort in our armies. When war comes, it will not do to let men, or even groups of men, act for themselves. They must act together, under officers who have the power to tell them what to do, and in a way the fighting armies of to-day are not very different from the slaving armies of the past. There is, however, this difference; the men in armies to-day, if they are fighting for their homes, their country, do so, or should do so, willingly. Any other sort of war is a crime, and should not be fought at all.

In making use of man power to do the different sorts of work we have read about above, the early peoples soon found new ways of applying that power. One of these was the lever. We all know how, by placing one end of a long stick or bar under a stone, and pressing down on the other end, we can raise the stone, even though, without the bar, we could not lift it at all. Such a bar is called a lever. It does not create new power, but only makes better use of the power we have. For in order to raise the short end of the lever, and the stone, a few inches, we have

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to press the long end down several feet. Thus we lose in distance, but gain in the weight we can lift.

In the same way men found out how to make use of the block, or pulley, with a rope through it running over a wheel, to raise heavy weights, and the screw, which you see to-day in the ordinary jack-screw, with which you can raise an automobile just by turning the screw around with a lever or bar. They found out how to use wedges, too, for splitting wood, or stone, and the windlass, a wheel or drum on which a rope is wound when it is turned around by means of handles or bars. The capstan on a ship is a windlass, and is used for hauling up the anchor.

But while the ancient peoples, in lifting and moving heavy blocks of stone and the like, made use of levers and pulleys and jacks, these things, as we have said, did not give them new power, but only made it possible for them to make better use of the power they had. And that power, as we have seen, was chiefly man power.

The really interesting thing about the use of man power in early times is not so much that

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some men were free and some were slaves as it is that man, by using his brain; is slowly coming to make nature, instead of other men, do his work for him.

You will hear a great deal about the hand-worker and the brain-worker, even to-day, and you will find that there is constant bitterness and quarrelling between them, because some think that the hand-worker does not get enough for his labours, and that the brain-worker gets too much.

But if you will think about it you will see that there is one kind of brain-worker who is working for the hand-worker all the time, although some of the hand-workers do not admit it.

These are the scientists, the chemists, the engineers, the inventors, the great body of men who really think.

Look back over the thousands of years that have passed since man first began to walk erect, to be different from the animals. The thinkers have been the ones who have made things easier, whether they invented bows and arrows with which to get food, or irrigation, to give the people rich crops, or wind and water wheels to grind

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their corn, or a thousand and one other things that are slowly making it less and less necessary for one man to labour for another.

The progress has been, and still is, slow, yet only a very few years ago thousands of labourers were digging ditches that steam shovels are digging to-day, thousands of stokers were sweating in the boiler rooms of ships that are now being driven by oil engines or electricity. And we have only just begun. Before long all the labourers who dig in coal mines will be gone, because we will no longer use coal for fuel and power. Some of that power will come from our rivers and streams, harnessed to great water wheels for making electricity. Some of it may come from the use of the wind, the waves, the tides, in ways we do not yet know. Some will come from the heat inside the earth, deep pipes being driven down and water run into them to be heated by volcanic fires. Some will come from the sun itself, not indirectly, through the use of water power, or coal, but directly, the heat of the sun as it shines down on us being turned into power. Alcohol, made in vast quantities from

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vegetable matter, will be used to run engines in place of the gasoline which comes from our lessening supplies of oil. New ways of producing power may be discovered by scientists at any time. When Man has at last become master of the forces of Nature these forces alone will be his slaves.



## CHAPTER XVIII.

### THE GOLDEN GIRDLE

GURM the trapper lived on the edge of a great dark forest of oaks and pines in the central part of what is now called Europe.

While the people about the wide inland sea, the Mediterranean, were building cities, carving figures of their kings and gods, sailing the ocean in ships, making fine cloth of cotton and linen, working in pottery and bronze, the tribes of the great forest country in which Gurm lived were leading a very much more simple and primitive life.

The time had not yet come for these rough, hardy people to load up their ox-carts and move toward the warmer countries of the west and south. In fact they knew nothing about these countries, and were content with their simple forest life.

Gurm lived with his father and mother, his brothers and sisters in a house built of logs.

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There was a big stone fireplace at one end of it, at which the cooking was done. The roof of the hut was made of thick sods, held in place by flat stones, so that the wind could not blow it away. In the single room of the house the whole family slept on the floor, wrapping themselves in skins and huddling close about the fireplace in winter, to keep themselves warm. At the far end of the same room slept the cattle, cows and sheep and goats, crowding together to keep away the cold winter blasts.

The people of Gurm's tribe milked the cows and the goats, and made cheese of the milk they did not drink. They had rough pottery vessels, jars and bowls, moulded by hand, not turned smooth and round on a revolving stand or wheel, such as the people of the south had by now learned to use. They cut down the pine trees in the forest with fine, polished axes made of hard stone, and sawed the logs into pieces with flint saws, or hewed them into timbers with stone adzes. Their clumsy carts, as we have seen, had great round wheels of solid wood, and were drawn by sturdy oxen.

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They used fish hooks and nets, to catch fish from the rivers and lakes, while small game they shot with bows and arrows, or caught in traps. They had dogs, fierce animals something like the police dogs we see to-day, and these dogs they used in hunting deer, and bear, and other large animals. But they had no horses, as the nomad tribes had, and as they used furs from the animals they killed to keep themselves warm, they did not bother to weave rugs of wool, as the shepherd tribes did. But they made a coarse white cloth from the fibres of a plant called flax, which cloth is known as linen, and they wove some cloth of wool, too, and made clothing of it. But for the most part they used furs and leather.

In the clearings about their villages they planted and raised grain, barley and wheat, and vegetables with tender roots, good to eat, such as our parsnips, and turnips, and beets. They ploughed the ground with rough wooden ploughs drawn by oxen, and cultivated it with hoes made of wood and stone. They ate wild fruit, such as crab-apples and berries, and took the honey stored up by the bees during the summer to make

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sweet drinks with, and use on their cakes of barley and wheat.

The reeds from marshes and the tough grasses from the fields they used for making baskets and ropes. Their needles were fish bones, their weapons, stone or copper pointed spears, axes, bows and arrows, and heavy clubs with spikes of copper or flint in their heads.

Living such a rough and hardy life, these forest people became very fierce and strong. They had to fight storms, bitter cold and ice and snow, savage wild beasts, as well as the enemy tribes about them; in fact, their lives were largely spent in fighting.

They traded a little, not much, with the other tribes they met, bartering the soft, rich furs of the animals they trapped for things brought from distant lands, gold ornaments, weapons of copper and sometimes of bronze, bright shells and bits of stone to be strung on wires of gold and used as jewels, and many other things.

Gurm, who spent his days in the forest, trapping, was very much in love with Vana, the daughter of one of the richest men in the tribe,

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and in order to win her he wanted to lay at her feet beautiful things, just as young men do to-day. And the only way he could get such things was by trading the furs of the animals he caught, for them. So he worked very hard.

Gurm knew of several ways to trap the animals he sought, but the one he used most was made in this manner.

He would find a place in the forest where the animals had made a path, going down to the bank of the river to get water. Along this path he would pick out a tough, strong young tree, or sapling. With his knife he would trim all the branches from the sapling, and at the end of it he would tie a stout cord of twisted flax, made into a noose. Into the ground beside the path he would drive down a strong peg, with a notch in it. Then he would bend the sapling down and catch the end of it under the notch in the peg. The noose he would spread loosely around the peg in a circle, and at the end of the bent sapling he would tie a bit of meat, or the root of a vegetable for bait. Then he would put some more bait on the ground, about the peg.



GURM WAS A SKILFUL TRAPPER

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The animal he wished to trap, going along the path to the river, would smell the food and turning aside begin to eat it. First he would eat the food lying on the ground, and when that was gone he would take the bait at the end of the sapling in his mouth and tug at it, trying to pull it away. All of a sudden he would pull the end of the sapling loose from the notch in the peg, and it would fly up in the air, at the same time tightening the noose about his neck. When Gurm came along the next day he would find the animal he had trapped hanging dead at the top of the sapling.

All through the winter Gurm worked, skinning the soft, glossy furs from the bodies of the animals he caught, and bringing home the meat for food. But the skins he cleaned and made ready to be used for thick, warm garments, and stored them away.

In the spring men would come wandering through the forest passes from other tribes to the south and west, where the land was not covered with thick woods, but was open, with grassy fields and plains. These men liked the furs that

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Gurm offered, for their country was cold, too, in winter, and they brought many things in exchange for them, but Gurm took only bits of gold and bright shining jewels, which he meant to give to Vana.

There was another young man in the tribe who also loved Vana, and his name was Brenn.

This Brenn was a bigger man than Gurm, and a stronger one. He spent his time hunting and fighting, and laughed at Gurm and his little traps. He had a two-handed sword of bronze that he had taken from an enemy he had killed in battle, and when he swung the great blade it whistled through the air like the wind, ready to cut a man in two at one blow. Brenn often swung his sword when Gurm was about, looking at him fiercely as though to show what he would do to any one who got in his way. Gurm, who was as brave as he was clever, only laughed, which made Brenn more angry than ever. Over and over he would ask Gurm what he did with the bits of gold, the bright-coloured jewels he got in exchange for his furs, but Gurm would not tell him.

To keep them safe, Gurm had placed his treas-



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ures in a deer-skin bag which he hid in the hollow of a tree in the forest. He meant, when he had enough, to have Lok, the smith, make for him a broad golden girdle, with a jewel set in each of its flat plates. With this girdle Gurm planned to go to Vana and ask her to be his wife. He felt sure she would marry him, for no woman in the tribe had ever had so splendid a girdle as the one Gurm had in mind.

One evening Gurm went to the tree in the forest to add to his treasures a bit of bright green stone he had gotten in exchange for some otter skins.

Looking carefully about to see that no one was watching, he drew aside the bushes at the base of the tree. Behind them was an opening about as big around as a man's body, leading into the great hollow trunk.

Gurm stuck his head and shoulders into the opening and after digging about for a few moments in the soft rotten wood at the bottom of the hole, drew out his deer-skin bag. With a smile he opened it, counted the jewels, weighed the lumps of gold in his hand. Lok, the smith,

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had told him how many links there would be in the girdle, how much gold he would need. He thought, now, that he had enough, and made up his mind to see the smith the next day.

He put the bag back in place, covering it up carefully. As he rose to his feet he saw a dark figure flit away through the shadows about the trees. He could not be sure, but it seemed to him that it was Brenn, watching him to find out his secret.

Gurm smiled to himself, and waiting until Brenn had vanished in the darkness, took the bag from its hiding place and tied it to his belt. Then he went back to the village, where the people of the tribe were gathered about the steaming pots, the joints of meat roasting on spits, making ready for the evening meal. He saw Brenn watching him, but said nothing, and when he had eaten, he went in secret to the shed behind his father's house where he kept the snares and other gear he used in trapping.

Without letting any one see him, Gurm took the big deer-skin bag in which he brought home his pelts from the traps, and placing a long coil

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of rope inside it, threw the bag over his shoulders and disappeared into the forest.

As soon as he got to the tree he set to work. First he tied one end of the rope to the empty bag. Then he threw the other end over a strong limb of the tree, about fifteen feet from the ground. This done, he filled the bag with stones, and taking hold of the loose end of the rope, hauled the bag up to the limb. It was very heavy, with its load of stones, and it took all Gurm's strength to pull it up. To hold it there, he tied the loose end of the rope to a root, then, climbing the tree, he dragged the bag of stones into a crotch, where it rested safely. Then Gurm climbed down again and, untying the rope from the root, arranged the end of it into a slip-knot, or noose, about the opening into the hollow tree. To hold the noose in place around the opening he used little pegs made of sharp thorns, stuck into the soft bark.

Then Gurm took more stones, filling the leather sack about his waist in which he carried food, and climbing up into the tree again, put the stones into the larger bag. Several times he

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did this, until the bag lying in the crotch was filled to the brim. When all was ready, Gurm sat down in the crotch beside the bag of stones and waited. He believed that, when all the people of the tribe were asleep, Brenn would come creeping through the darkness to the tree to steal his treasure.

For a long time Gurm waited, watching the stars through the tree tops, but no one came.

At last he heard a rustle of leaves at the base of the tree, and peering down, made out the dark form of a man, pushing aside the bushes which grew about the hole. With every muscle taut, Gurm took hold of the great bag of stones, waiting for the moment to spring his trap.

With his keen eyes he pierced the darkness, and saw Brenn stick his head and shoulders inside the opening, searching about in the hollow of the tree for whatever might be hidden there.

Then Gurm lifted one end of the bag of stones and putting forth all his strength, tumbled it from the crotch to the ground.

With a swish it fell, and as it fell it drew the

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noose tight about Brenn's waist and lifted him high in the air. When Gurm got down from his perch the unfortunate Brenn was dangling by his waist twelve feet from the ground, cursing and shouting and waving his arms and legs about like mad. But there was nothing he could do. The noose held him so tight that there was no chance to escape from it; he could only hang there, his feet on one side, his head on the other, like a bag of meal.

Gurm laughed softly and left him. But before he went he took Brenn's two-handed sword from the ground beside the tree, where Brenn had placed it.

In the morning Gurm came back to laugh at his enemy and taunt him, but Brenn could make no reply, for he was half dead from exhaustion and pain. The rope cut him cruelly in spite of his heavy leather coat, and he could only beg Gurm in whispers to let him down.

This Gurm agreed to do, but before he did so he made Brenn swear, by the gods of the earth, and the forest, and the sky and the river and the

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hills that he would let Vana alone, so that Gurm could make her his wife, and also that Gurm should have his great two-handed sword.

All these things Brenn swore, upon which Gurm cut the bag of stones loose from the rope and slowly lowered Brenn to the ground. But he had the two-handed sword ready, in case Brenn proved false to his oath.

But the bully had had enough. There was no fight left in him. Beaten, afraid, he slunk back to the village.

Then Gurm had Lok the smith make the girdle for Vana, of twenty plates of gold, each as broad as the palm of his hand, with a bright-coloured stone in the centre. And when Vana saw the beauty of the cunningly wrought girdle, she loved Gurm more than ever, and agreed to become his wife.

## CHAPTER XIX

### GODS AND MEN

IN the beginning, men began to think of gods, or of a god, for two reasons.

One was gratitude, the other fear. Gratitude for blessings which had been given them, and fear of harm which might be done them.

If you had lived away back in those early times, you would have felt that way, too. When you saw that fire drove away wild beasts and kept you warm, that the sun made things grow, that the great river, overflowing its banks, watered your garden and gave you rich crops, you would have been grateful for these blessings, and felt that you should worship the power that gave them to you, by prayer and sacrifice, by building temples and altars.

In this way men came to worship Fire; and the Sun, and the River Nile; and the Moon, the Stars, the Ocean and many other things, calling

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them gods, and building temples to them. And when some great leader of a tribe, who had done good to his people by driving off their enemies, died, and was buried beneath a mound of rock, men began after a time to think of this leader or hero as a god, too, because of his mighty deeds, and to believe that he still lived, in another world, and would help them if they prayed to him, in time of trouble. So not only did things like the Sun and the Moon become gods, but men, too, became gods, a different one in each tribe. These were the gods that men made because of gratitude and love.

The other kind of gods, the gods of fear, men created for the opposite reason. The storm, the serpent, the demons of disease, and darkness and death, all the things the peoples of those days feared, they worshipped too, not in gratitude for blessings they had received, but to ward off danger and harm they thought might come to them.

From these two causes, gratitude and fear, came the pagan gods. Men built great temples to these gods, with strange figures in them, and sacrificed to them food, and burnt offerings of





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sheep, and rams and bulls, and sometimes even human beings, to please the gods and ward off the dangers they feared. The priests of these temples had great power. Almost all knowledge and learning was in their hands. They held the secret of reading and writing. They cured the wounded and the sick. They claimed, through the oracles, to be able to read the future. Sometimes they were even the rulers, as well as the priests, and the people feared them, because they claimed the power to bring down the anger of the gods on all who did not obey them.

This power over the common people the priests kept up by all sorts of tricks which to the ignorant seemed very wonderful indeed. They built idols which spoke, although the voice was that of a man hidden inside them. They built temples with whispering galleries, so that strange voices would seem to come out of the air. Having a knowledge of astronomy, they could foretell eclipses of the sun and moon, and told the people that at such and such a time these heavenly bodies would show their anger by hiding their faces. Knowing the position of the sun on the day of

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the vernal equinox in spring, and of the autumnal equinox in the fall, they arranged their altars so that at a certain moment on these days the sun's rays, coming through a narrow slit in the wall of the temple would strike the centre of the altar, and this the people thought a great miracle. The priests of Ur, a very ancient city in Chaldea, not far from Babylon, who worshipped the Moon, arranged by means of mirrors to throw a reflection of the moon at a certain hour of the night each month, into a chair which was called the Moon God's throne, and when people in the temple saw this bright reflection of the moon suddenly appear in the darkness, sitting in the middle of the throne, they were terrified, believing that the moon itself had come down to earth to be worshipped by them. These are only a few of the many ways in which the priests used their knowledge to gain power over the people.

But it is a strange thing that no matter how many priests and smaller gods the people had, they gradually came to believe in one chief god, stronger and more terrible than any of the lesser gods, whom they both loved and feared, because

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they thought he could shower blessings on them, or harm and punish them, as he pleased.

Such a great god or spirit we find at the back of nearly all the ancient religions. Men, without knowing why, came to believe that there must be this ruler of all things whom even the lesser gods feared and had to obey.

Among the Greeks, this chief god was called Zeus, among the Romans, Jupiter, among the peoples of northern Europe, Odin, among the Egyptians, Aton, among the ancient Hebrews, Jahva, or Jehovah. Even the American Indians worshipped a Great Spirit.

A very long time ago a certain Pharaoh of Egypt named Akhnaton made up his mind that there was really only one god, after all, and that the others, in spite of their temples and their priests, were not gods at all. This Pharaoh, who must have been a very wonderful man, ordered the temples of the other gods to be closed, and their statues to be thrown down. The people, he commanded, must worship no one but Aton. For eighteen years he held out against the anger of the priests, who did not want their

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temples closed, as it left them with nothing to do. Then he died, and his son-in-law, who came to the throne, went back to the old gods again.

Another king, whose name was Nabonidas, tried the same thing in Babylon a thousand years later, but the priests were too strong for him, too, and the people continued to worship as they had before.

But one tribe, a race of shepherds and nomads called the Hebrews, or Jews, also had the idea that there was but one god, the great Jehovah, strong and terrible, ready to shower blessings on those who obeyed and served him, but quick to punish those who disobeyed him.

Wandering about as the Hebrews did, without temples or priests for a long time, they were better able to keep their faith in one God than the priest-ridden Egyptians and Babylonians were, and now almost all civilised peoples believe, as the Hebrews did, in one supreme and all-powerful God or Creator.

The tribal gods of the early peoples were always pictured by the priests as being very strong and terrible, full of wrath, which could only be

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turned aside by strange sacrifices and burnt offerings, and this was just as true when they came to have one God, as when they had many. The priests had two reasons for doing this. One was to make the people obey. If they did not, the priests told them, God would be angry, and send down some awful fire, or storm, or sickness to punish them. That was the first reason. The second was to terrify their enemies. If one tribe had a stronger God than another, that tribe could always win, for their God would be there to help them. This made the people brave; they fought better, if they believed that they had the strongest and most powerful God on their side. Even the ancient Hebrews believed this. They claimed that they were a chosen people, especially picked out by God for His care and protection, and in their history, as set forth in the earlier books of the Bible, there are many accounts of battles and difficulties of other sorts in which God helped them to overcome their enemies by personally coming to their aid.

Thinking men and women to-day do not believe that the God of all things, no matter by

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what name we call Him, is on the side of any one people against another, but that He must look on all His children alike, a God of love, whom we do not have to please by making burnt offerings, but by doing what is right toward our fellow men.

In addition to the idea of a single God who ruled the world, the early peoples slowly came to have another idea—the belief that men after they died would live again. This is called immortality.

When some great chief or leader had passed away and been placed in his tomb, the people, as we have seen, often came to think of him as a god, who would come back to help them in time of trouble. Believing this, they also had to believe that he was still living, else how could he come back to help them. But since he was not living on earth, they thought he must be somewhere up in the sky, since that was the only place, except the earth, that they knew anything about. So they pictured these hero-gods as living in a heaven somewhere up above. And naturally they thought that if the gods lived there, they them-

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selves, when they died, could go and live there too.

Each people, in these pictures they made of heaven, very naturally thought of doing, when they got there, the things they had most enjoyed doing on earth.

The ancient Egyptians buried chariots and weapons of the chase in the tombs of their dead, because hunting was one of the royal sports of their kings, and they supposed they would hunt lions, and deer, in heaven, just as they had on earth. The American Indians had the same idea. Spending their lives as they did in fishing and hunting, they thought of heaven as a Happy Hunting Ground, full of all sorts of game.

The fighting peoples of northern and central Europe were warriors. During the long, cold, winter evenings they sat about their banquet tables in great halls, drinking mead made from honey, listening to the songs of their bards, telling stories of victories in battle. So their idea of heaven was a place where great heroes sat about in just the same way, boasting of their victories.



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The Hebrews, on the other hand, were a trading instead of a fighting people. They were fond of gold, of silver, of jewels, of richly ornamented temples, of the music of cymbals and harps. So when they pictured heaven, they naturally surrounded themselves with all the things they loved, just as the other peoples did. The Turks and other worshippers of Mohammed dreamed of beautiful gardens, with food and drink, and lovely women to wait on them because those were the things they most prized on earth.

So we see that each race and people had its own notion of what heaven should be.

The important thing about these ideas of heaven among the different peoples is not that their ideas were different, but that they all believed in life after death, and this belief we find in all the races of the earth.

Belief in a single, all-powerful God or Creator, and belief in a life after death, were the two great religious ideas worked out by the thinkers among the early peoples. These two beliefs lie at the root of all religion.

## CHAPTER XX

### MUSIC

WHEN the first shepherd boy, tired of sitting alone all day watching his flocks, made a little pipe or whistle out of a hollow reed, and blew a few soft notes on it, he did not know that the thing he had invented was to be the father of all wind instruments, down to the great organs that peal in our cathedrals and churches.

And when the early man who discovered that a piece of string or gut, tightly stretched across a hollow gourd or shell, would give off a musical sound when struck or picked with the fingers, he did not know, either, that he had made an instrument that was to be the father of all stringed instruments down to the violin and the piano.

But before either of these, the early men had found an even simpler way of making sounds, and that was by striking on hollow logs, having bits of skin tightly stretched over the ends of

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them. These striking instruments, called tom-toms, or drums, were not exactly musical, but from them have developed cymbals, and other forms of instruments that are.

In these three things, the shepherd's pipe, the instrument with strings, the tom-tom, all music began.

From the earliest times, music has had a wonderful effect on the minds and hearts of men. Under its influence they dreamed of love, of beauty. They became braver in battle. We all know how we feel when the band in a military parade sweeps by playing some stirring air or song. It was to fill the soldiers with courage and patriotism that they went into battle with bands playing, before war became a matter of trenches and dug-outs half a mile apart, as it is to-day. Different kinds of music can make us sad or gay, religious or reckless, sentimental or brave, as the case may be. For these reasons the early men were very fond of it.

The growth of man's knowledge of music was of course very slow, yet even in the most ancient times it filled a large part of the lives of the peo-

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ple. Whenever the early tribes wanted to have a feast, a celebration of any sort, even a religious one, they made use of music, and of the singing and dancing and clapping of hands which went with it. At first the people only chanted, or sang, but soon the reed pipe of the shepherd, the rude lyre or harp with its tightly drawn strings, the tom-tom or drum, came to be used in celebrations of all sorts, just as they are used, in different form, to-day. Even in the temples, song and music were used in worship, as they are used now.

We can easily see that to dance—and all the early peoples were fond of dancing—there must be a certain beat, or rhythm, as it is called, just as there must be rhythm in the singing of a song, or the marching of men to battle, and hence one of the first things we find in music is this regular beat, or rhythm. After that came melody, which is the arrangement of musical notes in a varying order, or pitch. You can see how this is when you whistle; you do not always whistle the same note, but change it, to make it sound pleasing. In this way is formed a melody, or tune. But

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what may seem melody to one person, or race, may sound harsh and unpleasant to another, just as Chinese music sounds harsh and unpleasant to us, and ours, no doubt, to them.

Among the early peoples, then, tunes and airs having a regular beat or rhythm were used for the songs of the bards, for dancing and feasting, for religious worship, and for war. And as in those far-off days these four things were about all the people did, we can see that they used music very much indeed.

Before long the first tom-toms or drums changed to musical gongs, cymbals of brass, so often mentioned in the Bible, and later, to tambourines, and many other instruments.

At the same time, the earliest form of stringed instruments soon became such things as the lyre, or psaltery and the harp. Both the psaltery and the harp are spoken of in the Bible, and a form of harp made of a hollow wooden box with an arm fixed to it holding four strings was used in Egypt in very ancient times. The Chinese, too, used stringed instruments, made by stretching

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a great number of strings or wires, sometimes as many as twenty-five, across a table having a hollow top, to increase the sound.

Among the Greeks the favourite instrument was the lyre, made in the shape of the letter "U," with a bar across the top, and strings stretched from this bar to the bottom of the "U."

The pipes of the early shepherds, first made of a single reed, soon were made of a number joined together side by side, some longer, some shorter, and each giving a different note. The player moved his lips quickly from one reed to another, making a simple melody. But it was soon found that by using only one reed or pipe, and boring a number of holes in the side of it, the note given out could be changed by opening or stopping up these holes with the fingers. From this came such instruments as the piccolo, and the flute.

The earliest horns were made of the horns of oxen, and it is from this that they take their name. But as soon as metals came into use, horns were made of copper, and bronze, and brass, and

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even of silver and gold, just as they are now. All the brass instruments you see in a band to-day came from the little shepherd's pipe.

The instruments which were played by striking on them, the tom-toms and drums, became cymbals and gongs, as we have seen. But soon men found out other ways of making music by striking on things. The Chinese used rows of metal or porcelain bells, little ones at one end, running up to big ones at the other, all hung from a wooden bar. By striking on these bells with a mallet, musical notes and melodies could be made. Other peoples used blocks or bars of hard wood, arranged in the same way, and many instruments of this sort are still in use. In South America they have one called the marimba, and you may have had something of the sort, a row of little metal plates or bars to be struck with a hammer, among your toys. It is called a xylophone.

The instruments with strings were first picked with the fingers, as harps and guitars and mandolins are picked to-day. Later on, the bow was invented, strung with horsehair, and scraped along the strings of such instruments as the vio-

lin. Sometimes the strings were neither picked nor scraped, but struck with tiny hammers of wood. An instrument of this sort, called a *cembalo*, is often used in Hungarian orchestras.

To make the picking of the strings easier, the clavichord was invented. In this instrument there is a keyboard, or row of keys like those on a piano. When a key is struck an arm at the other end of it flies up. On the end of this arm is fixed a little quill, or brass tip, which picks the strings of a harp laid flat in a wooden case. Clavichords are not used to-day. They were first made hundreds of years ago. But from them came the modern piano.

As we have seen, music played a great part in the lives of the ancient peoples. Some sacred songs were supposed to work miracles, such as making it rain. Others were thought to ward off diseases and death. Still others were supposed to give the player or singer power to make animals or other men do as he wished. We all remember the songs of the Sirens, against which Ulysses stopped his ears so as not to hear their melodies. In the Bible, the sound of trumpets



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caused the walls of the City of Jericho to fall. Among the Greeks, the songs of Orpheus were said to cause wild animals to lose their fierceness and follow him about. From such ancient myths we can see how great an interest the early peoples took in music.

## CHAPTER XXI

### NUMBERS

JUST as people in ancient times learned to write, so they learned to count—to gain a knowledge of numbers.

If a man had three sheep, and lost one of them, he had to be able to count, in order to know that one was gone and only two were left. If he had not he would soon have been without any sheep at all. He learned to count, so that he might keep track of what he possessed, whether it was sheep, or oxen, or arrows, or measures of grain.

At first man could count only two—himself, and some one else. His mind would not go beyond that. But before long he was able to count up to ten.

If you had lived in those days, and had wanted to count, let us say, the number of birds you had shot with your bow and arrows, the easiest

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way for you to have counted would have been on your fingers. And because you have ten fingers, you would have counted things by tens. This is just what men did, in early times, and they have been doing so ever since, although there is another and later way of counting by twelves, and to-day we have twelve inches in a foot.

When, in counting on your fingers, you had reached ten, you could have gone no further, having no more fingers, so you would have had to begin all over again. But for each ten you counted, you would of course have made some sort of a mark. You might have made a cross, like the letter "X," and that, as you of course know, is the sign for ten in the Roman system of numbers, and is used even now to mark the hour of ten on the faces of watches and clocks.

After the fingers came what is called the abacus—rows of little coloured balls strung on wires in a frame, to make counting easier. Such counting machines are used to this day in China and in Russia. By moving the little balls up and down along the wires, it was possible to keep count of things up to a certain point, but a system



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of written numbers was as necessary to the early civilised peoples as was a system of letters for writing.

Among the people of Babylon, who wrote in wedge-shaped marks on tablets of clay, the Phœnicians, whose many-oared ships sailed out of Tyre to found the great city of Carthage, and the Egyptians of the valley of the Nile, it was usual to make a single straight mark, up and down, for 1, two marks for 2, and so on up to 10, for which they had a special sign. After that they began all over again, adding a straight mark to the sign for ten in order to make eleven, adding two straight marks for twelve, and so on up to nineteen. For twenty they either used a new mark, or a double ten mark, as the Romans did when writing twenty thus, XX. And so on.

The Romans and Greeks made this simpler by using for 5, instead of five straight lines, the letter V. You all know how to write these Roman numbers, up to 50, which is L, and 100, which is C.

But these Roman letters were rather clumsy for quick figuring, such as we do to-day, and so

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there came into use the system of numbers we now employ.

Just where our modern system of numbers came from is not clear. It was brought into Europe by the Arabs, that talented people from the sandy plains of Arabia, who at one time conquered the clay country of Sumer and Sargon, and built a great city not far from ancient Babylon called Bagdad. No doubt you have all read about Bagdad in the "Arabian Nights."

But just where the Arabs got this system of numbers we do not know. There are ancient inscriptions or markings on the walls of caves in India, which contain many numbers almost exactly like those we use at the present time. Such numbers may have first been used in India, but whoever invented them, the most valuable thing about them was the use of the "0," or zero.

If you think for a moment you will see why this is so. Take the figure 1 and put a zero after it and we have 10. Take a 3 and put a zero after it and we have 30. Take a 9 and put a zero after it and we have 90. Take a 1 and put two zeros after it and we have 100. Put three

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zeros after it and we have 1,000. With six zeros we can write 1,000,000, that is, a million. And so on. Think how simple that is compared with the Babylonian system of straight marks, or even the improved system of the Greeks and Romans. It was the invention of the zero, placed after the other nine figures we use, that made all our vast system of numbers, our addition, subtraction, multiplication and division possible. Millions and billions of figures, written down each day in account books and calculations, in banks and factories and stores, make up the business of the world. Just imagine trying to keep all these accounts in the system of numbers used by the Phoenicians, or the Egyptians. We can write down a billion almost as easily as we can ten, just by adding more zeros, but the ancient Egyptians had to have special pictures for the higher numbers. When they wanted to write a hundred thousand, they made a picture of a frog. A million was a man with his arms stretched out in admiration. The man who first thought of using the zero, in a system of numbers, was one of the great inventors and thinkers of the world.

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As man learned how to count, he also had to learn how to measure things, and to weigh them. So he invented measures of length, or distance, such as the foot and yard, measures of volume, such as the bushel, or gallon, and measures of weight, such as the ounce or pound, and at the same time he began to make use of scales.

The first measures of length or distance, were taken from the human body. The Hebrews called the width of a man's finger a digit; four digits, or the width of his hand, was called a palm. Three palms made a span, and two spans, a cubit. The Egyptian cubit was about twenty and a half inches long, and contained twenty-eight digits, or seven palms. The foot was originally the length of a man's foot.

We can see at once that a man's palm, or his span, or his foot would not be very useful measures, unless all men's palms were the same width, their feet the same length. But of course they are not, and so it became the custom to make a bar or rod of the fixed or standard length that was agreed on, and place it in the temple, or the king's treasury, from which all had to take the lengths



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of the various measures they used. When everybody's yardstick was the same, a person could buy a yard of cloth without being cheated. And the same thing was true of weights, and measures.

This may perhaps seem very old-fashioned, but it is exactly what we do to-day. In the United States, in Great Britain, in France and other countries, standards of length, of volume, and of weight are fixed by the government just as they were in ancient times. The English standard of length is a bronze bar one yard long divided into feet and inches, and carefully kept by the government so that every one may know just how long a yard should be. In the United States, although the yard is also used, the meter is a standard, as it is in France, and there are standard pounds and gallons and bushels which it is against the law to change, just as in Bible times there were standard shekels and cubits.

With the use of weights came the use of scales. They were probably first employed in weighing such things as silver and gold. Grains of barley were used, in the beginning, for making the little

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pans of the scales balance—a pinch of gold dust, perhaps, on one side, a few barley-corns on the other. It was from this use of grains of barley that the weight called the grain got its name.

So we see that as man gathered possessions, such as cattle, and sheep, and goats, he had to find ways to number or count them, and as he grew grain, he had to have measures to measure it out in when trading, and when he built buildings, he had to have cubits, and digits, and palms, with which to draw his plans and measure his timbers and stones, and when he came to trade in gold and silver, he had to have scales to weigh it in, and weights to see how much it weighed. All these things man added to his store of knowledge, in the far-off days before the beginning of history.

## CHAPTER XXII

### A DAY IN EGYPT 4,000 YEARS AGO

As we have seen in the previous chapters, the early peoples, by the time what we now call history began, had stored up a great mass of valuable knowledge, and this knowledge, patiently gathered by hundreds of thousands of unknown thinkers, we are all of us making use of to-day.

Some of this knowledge, as we now know, was handed down century after century, by word of mouth, by fathers and mothers teaching their children the secrets of their crafts. Some came to us in books, in rolls of parchment or papyrus, in inscriptions on clay tablets, or on the walls of temples and tombs. And some we have learned from the relics found in the ruins of ancient cities—little things of every-day life which the men and women and children of those far-off times made and handled and used.

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Much of the knowledge which has come to us in books we owe to the ancient Greeks. We have already read about Hippocrates, the father of Medicine. Some day you will read the works of Plato, the philosopher, and of Aristotle, his pupil, who was the teacher of Alexander the Great. When you study geometry, you will be studying problems worked out long ago by Euclid, who was a Greek, although he lived in the city of Alexandria, in Egypt, where the great library that was burned had its home. The works of the Greek playwrights, Sophocles, Æschylus, Euripides, Aristophanes, are still read and their plays performed. But the writings of these men belong rather to historical times than to that great period of time of which we have been reading, and of which we have no record, except those glimpses here and there which come to us through the discovery of some long-forgotten palace, or temple, or tomb.

These glimpses show us, however, that the people of long ago were very far from being ignorant, even though they did not have motor cars, and airships, and submarines. Such peoples

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as the Phoenicians, the Babylonians, the Cretans, the Hebrews, the Chaldeans, the Egyptians, the Chinese and others were in certain ways quite as highly civilised as we are. In the carving and working of wood and of metals, in certain branches of pottery and glass making, in sculpture and in the cutting and engraving of gems, in dyeing and weaving, and in many other things, we know that they were ahead of us, for we find examples of their work, in tombs and elsewhere, more beautiful than anything of the sort we make to-day. We live in an age of machinery. Things are made in a hurry, for the sake of the money they will bring. In ancient times people were not so hurried. They worked slowly, with their hands, and whatever they made, from a glass bead to the statue of a god, from a carved and gilded chair to a mighty temple of stone, they tried to make as beautiful, and as lasting, as they could. We, in this day, are apt to pay too much attention to what is useful, too little to what is beautiful and worth while.

Many of the things these early peoples knew, much of the knowledge they stored up, was lost

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to us, during the Dark Ages in Europe, and had to be discovered over again. For instance, the ancient Chaldeans of whom we have spoken, who lived in the clay country not far from Babylon, had a great city called Ur. The priests of the temple of the Moon God in that city had a considerable knowledge of astronomy, as did also the ancient Chinese, and yet the people of Europe a few hundreds of years ago knew nothing about it. It is strange indeed to think that men could calculate eclipses of the sun and moon seven thousand years ago, and yet not know, in Columbus's time, that the earth was round. Such things as gunpowder, or the mariner's compass, by which ships are steered at sea, were known to the Chinese and the Arabs long before the people of Europe knew anything about them. We think of our great office buildings, fifty stories high, as very wonderful works, yet the pyramids of Egypt, which have already braved the storms of between five and six thousand years, will be standing for thousands more, when every office building in the world will have crumbled to dust. So do not let us think, even though our civilisa-

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tion to-day is in many ways a very wonderful one, that we have nothing to learn from the past.

Even the women, in those far-off days, had most of the things, and did most of the things, that women have and do in our own times. They used mirrors of polished silver, instruments, such as scissors, for taking care of the nails, face powder and rouge on their cheeks and lips, furs and jewels, and even flounces and corsets, as we see plainly from certain little figures which have been dug up on the Wonderful Island of Crete.

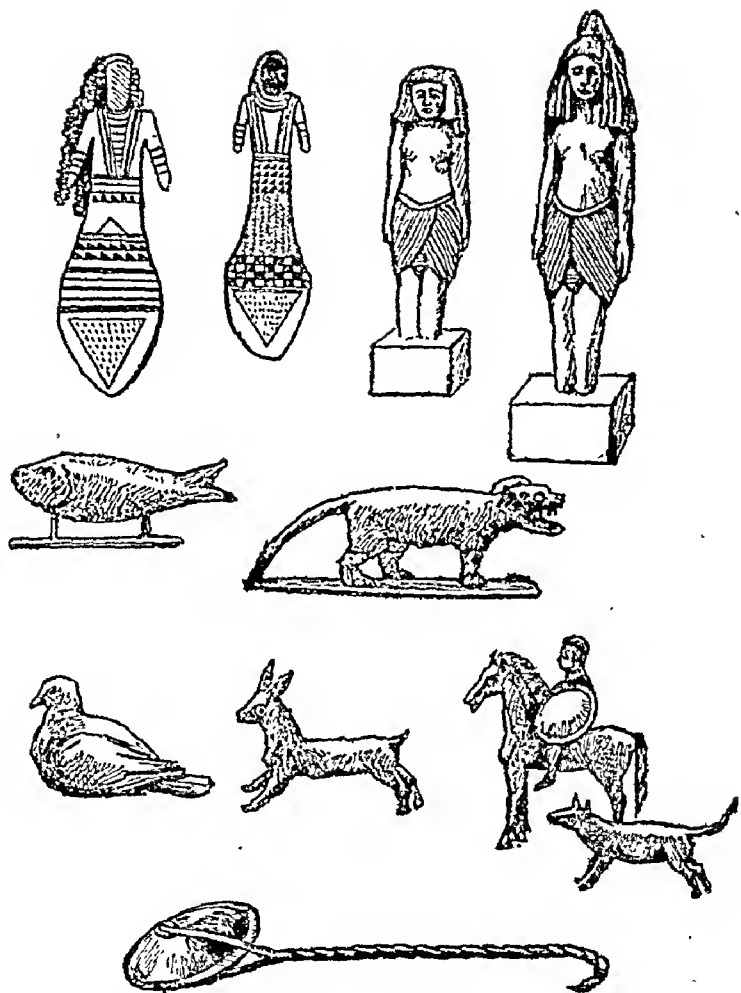
The sailors of those ancient days, even in their small ships, were hardy and brave. The Phœnicians made long voyages. Certain of them, acting for one of the rulers of Egypt, sailed out of the Mediterranean and navigated all the way around the great continent of Africa. The workers in metals made sword blades so finely tempered that they could be bent in a circle without breaking. The blowers of glass discovered and used colours which cannot be equalled by any chemist or glass-maker to-day. Houses were lighted by candles, or lamps, just as they were a hundred years ago, and in the same way wood

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was used for fuel. They had water works, just as we have now, and great public baths, finer than anything we know. They even had bath-tubs, with pipes supplying hot and cold water, as discoveries in Crete have shown, and by exercising and bathing took better care of their health than many of us do to-day. It is strange to think that in England at the time of Shakespeare, and in America at the time of Washington, bath-tubs were practically unknown.

The children in those days had toys, too, to play with; dolls made of wood and of clay, of metal and of stone, some of them with jointed arms, just as we make them now. They had wooden figures of animals, such as elephants, cows, goats, they had rattles and tops, kites and boats, marbles and whistles. They even played ball and some of these ancient balls have been found in Egypt, covered with leather as we cover them, and stuffed with hair. They had jumping-jacks, too, and doll's furniture and china beautifully carved and painted. In every country of the world, from the most ancient times, children have had their toys.





DOLLS AND TOYS OF LONG AGO  
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So we see that the earth's story, the story of its civilisation, is a very ancient one, and not a thing of yesterday. And in those far-off times people lived pleasant and useful and happy lives, just as they do now. Let us see, for a moment, just what life in those far-off days was.

It happens that we are able to do this better in Egypt than we are in any of the other countries of ancient times, because of the custom the Egyptians had of burying all sorts of things in their tombs. And particularly because of discoveries made in the tomb of an ancient Egyptian named Mehenkwetre, who lived about four thousand years ago in the great city of Thebes on the banks of the Nile.

This man Mehenkwetre was very rich. Like all Egyptians in those days, he believed that when he died, his wandering spirit (or rather one of his wandering spirits, for the Egyptians thought that men had several) would return to his tomb from time to time on a visit. So he caused his workmen to carve during his lifetime many little figures, like dolls, beautifully made and painted, of himself, his family, and all the

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servants and other people who served and waited on him.

He did this, so that these figures could be placed in his tomb when he died, and he believed that when his wandering spirit came to visit the tomb, it would have the power to make all these little dolls come to life, to wait on him. He wanted to have, when he was dead, the same comforts he enjoyed while he was living, so he took care to see that his butchers and his bakers, his brewers and his farmers, his cattle and his herders, and even his sailors with their boats, were all there to serve him when he had need of them.

So Mehenkwetre had all these figures carved, including those of himself and his son, and when he died, they were placed in his tomb, along with his mummied body, to stay there untouched for over four thousand years. Not long ago the tomb was opened and the dolls found, and from them we are able to get a very wonderful and exact picture of what the daily life of a rich gentleman in Egypt was, so long ago. Some of these figures, of which there were a great many, are now in the Metropolitan Museum of Art in

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New York City, where we can see them, grouped as though carrying out their daily tasks.

Mehenkwetre no doubt rose early, being a busy man, and after a bath in the pool in his garden, breakfasted on fruits, bread, and stewed meats and fish. Then he set about the duties of the day.

One of these duties was to inspect his cattle, his stock. We see him in one of the groups, sitting on the porch of his house, with his son beside him. Through the courtyard in front of the house, his herders are bringing a drove of cattle. There are clerks near by, with rolls of papyrus in their hands, on which, no doubt, was set down a list of the cattle, their number and kind, so that they might be checked up, to see that none had been stolen or lost. There are a dozen or more servants in this group, and some twenty animals, all painted to their exact colours. Some of the cattle are white, with brown or black spots, and have long straight horns. The herdsman wear single garments of white linen tied about their waists, leaving their arms, shoulders and legs bare. The little scene looks like a picture of real life.

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Other groups show scenes in his stables, where busy servants are feeding and fattening animals for the table. Mehenkwetre must have liked good things to eat, judging from the fatness of his oxen.

Presently we see the animals being slaughtered and cut up into sections, which are hung on hooks in the air to cool. Everybody is very busy, and we can imagine that the master of the house saw that they did not sit about with idle hands. Yet they all look well-fed and happy.

In another place we see the dairy. Here cows are being milked by careful slaves, who no doubt made their reports to Mehenkwetre's wife, as did the women we see spinning flax into thread for making fine white linen. Everything was made on the place. There is a bakery, showing the grain being ground into flour by women, using a hand mill, and the baker kneading it into loaves and placing them in the oven to bake. The bins in which the grain was kept are also shown, with slaves filling the bins from sacks, the number of which are being written down by clerks, for the master's watchful eye. There is even a brewery,

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in which all the steps of making beer are shown, from grinding the barley to pouring the finished liquid into jugs. We see that Mehenkwetre lived well, and set much store by the pleasures of life.

One of the little boats shows us that the great man was fond of hunting and fishing. It is a beautifully modelled craft, with high bow and stern and the flat bottom needed for sailing on the shallow waters of the Nile. The slaves in the crew are very busy spearing game, catching fish and wild fowl with nets. The master himself does not fish, nor does his son, for we see them sitting beneath a canopy, watching the sport.

One of the boats was used only for cooking. No doubt the smell of frying fish would have been offensive to the great man's nostrils, so the floating kitchen was left in the rear, until meal-time came, when it was called alongside, and the slaves with which the boat was crowded came aboard with their dishes.

These boats were rowed with oars, and steered by means of a great swinging rudder oar, fastened to an upright post at the stern. One of the largest of them is a pleasure boat, and

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beneath a richly decorated canopy at one end of it Mehenkwetre and his son sit in the heat of the day, protected from the sun, while singers and musicians perform for their amusement. Life for a rich Egyptian, in those days, must have been a very easy and pleasant one.

In the evening, no doubt, Mehenkwetre and his family sat among the fruit trees of his walled garden, feeding the fish in the pool, while harpists played the popular songs of the day, or friends came in to talk over the latest bit of court gossip. He was a great man. He ate and slept and lived and married and died, four thousand years ago, very much as we do to-day. Whether he was a good man or a bad one, whether his life was a success or a failure, we do not know. But in his day, as in our own, only one thing is really important—not when we live, nor where, but how.

END OF VOLUME TWO